Dave DeSoyle

CLASS 52

SERVICE MANUAL

NCR SERVICE

SALES SERVICE DEPARTMENT

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The National Cash Register Company

Dayton 9, Ohio, U.S.A.

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*Service Mark

CLASS 52

SERVICE MANUAL

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THE NATIONAL CASH REGISTER COMPANY
DAYTON 9, OHIO

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Dayton, Ohio, U. S. A.

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CLASS 52
SERVICE MANUAL

SECTION "A"

CLASS 52

The Class 52 is very similar to the Class 51 with the availability of a greater number of totals. Presently there are 15 Models available which increases the flexibility of the Class 52 so it is suitable to a great variety of businesses.

This Service Manual will give a complete explanation of the 52-D-10-5-1L(CCS)-CC-SI-TT-IC-CS-1. It will also cover the various features available on all Model Class 52 and the complete adjustments of all the mechanisms.

Additional information covering any additional features made available at a later date will be issued as Sections to this Manual.

The C-52-10 is basically a Change-Computation Model. It has Selective Itemization, nine Department Totals and a Group. A Collecting Group Total is also incorporated in this machine but is not considered a total as are the others. The accumulating capacity in each and every total of the C-52-10 is 999,999.99.

There are nine Department Transaction Counters which may be either Net or Gross Count; a Reset Transaction Counter; a two wheel Item Counter; a Customer Transaction Counter; and a No Sale Transaction Counter.

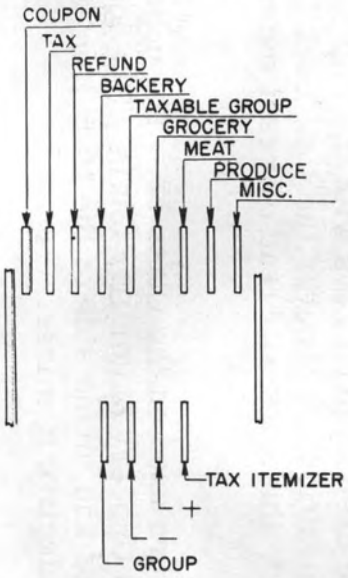
All operations with the exception of Taxable Total will be printed on the receipt. All items print on the detail is optional.

The date will print on Total operations on the Receipt only. The Consecutive Number will print on both the detail and receipt but will print on the receipt only on a Total operation.

There is six front and six back amount indicators. There are two transaction indicators which are used for both front and back indication.

The Row 10 keys are used as print keys with the Unit Lock Lever and the "register" position. Whenever the Unit Lock Lever is moved out of "Register", this bank will read or reset the counter Pinions in Row 10.

There are two counters used on the Class 52. The upper counter has the Row 2 and Grocery Motor Bar totals. The lower counter is used for the plus and minus side of the Main Itemizer, the Group Total and the Selective Itemizer.



READ GROUP

LOCKER REGISTER

REGISTER

READ RW 2 M BR-TX GP

RST RW2- & TAX GP

RST RW2+ & MTR BR

A B D E

$900 $90 $9 90 9 8 7 6 5 4 3 2 1 $100 $10 $1 10

MEAT
TAXABLE ITEM
PRODUCE
MISC.
BAKERY
REFUND
TAX
COUPON
TAXABLE GROUP

AMOUNT TENDERED
TOTAL
GROCERY
TAX TOTAL / ADD ON RELEASE
N CHANGE / S BAL DUE

REST		GROC	MEAT	PROD	MISC	BAKERY	REFUND	TAX	COUPON		ITEM
										NS	CUST

52D-S-10-5-IL (CCX) CC-TC-IC-SI-CS-I

When the Grocery Motor Bar or any key in Row 2 is used on an item operation, it will add into its own total in the upper counter and with the exception of Coupon Refund and Taxable Group, it will add into the plus pinions of the Main Itemizer.

The Coupon, Refund and Amount Tendered keys add into the minus pinions of the Main Itemizer while the Tax Item key which is used in conjunction with one of the Row 2 keys or the Grocery Motor Bar will add into the Taxable Itemizer. The Taxable Total key in Row 2 resets the Taxable Itemizer and adds into the plus pinions of the Main Itemizer and the Taxable Group in the upper counter.

The Total key reads the plus or minus pinions of the Main Itemizer while the Change Balance Due key resets these pinions.

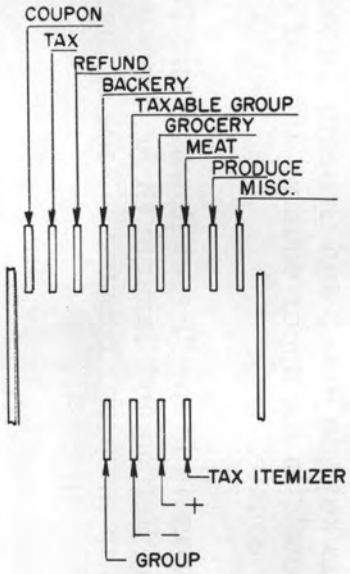
With the Unit Lock Lever in the "Read Group" position, all transaction keys except the Total key will be locked out. The Total key is used to read the group pinions in the lower counter.

With the Unit Lock Lever and the "Read Row 2 Grocery Motor Bar and Taxable Total" position, the Row 2 keys and Grocery Motor Bar will read their respective totals in the upper counter and with the exception of Coupon and Refund add into the plus pinions of the Main Itemizer. The Coupon and Refund add into the minus pinions of the Main Itemizer. The Total key in Row 2 will read the Main Itemizer and give a Net Collective Group total. This total is necessary since only when the totals in the upper counters are reset do they add into the Group Total of the lower counter.

The Taxable Group key in Row 2, when depressed, will read the Taxable Group total in the upper counter and add into the plus pinions of the Main Itemizer. This key is operated after reading Row 2 and the Grocery Motor Bar and depressing the Total key. Otherwise the Taxable Group Total will add into the Collecting Group and give a wrong Collective Group Total.

When the Unit Lock Lever is in the "Reset Row 2 + Grocery Motor Bar" position, the plus keys in Row 2 and Grocery Motor Bar will reset their respective totals in the upper counter and add into the Group Total in the lower counter.

When the Unit Lock Lever is in the "Reset Row 2 - and Taxable Group" position, the Coupon, Refund and Taxable Group keys will reset their respective totals in the upper counter. None of these totals will be added into the Group Total.



READ GROUP
LOCKER REGISTER
REGISTER
READ RW 2 M BR-TX GP
RST RW2- & TAX GP
RST RW2+ & MTR BR

A
B
D
E

$900 $90 $9 90 9 MEAT
8 TAXABLE ITEM
7 PRODUCE
6 MISC.
5 BAKERY
4 REFUND
3 TAX
2 COUPON
$100 $10 $1 10 1 TAXABLE GROUP

AMOUNT TENDERED
TOTAL
GROCERY
TAX TOTAL / ADD ON RELEASE
N S CHANGE / BAL. DUE

REST	GROC	MEAT	PROD	MISC	BAKERY	REFUND	TAX	COUPON		ITEM
									NS	CUST

52D-S-10-5-IL (CCX) CC-TC-IC-SI-CS-I

SEQUENCE OF OPERATION

With all totals in the machine reset and the Unit Lock Lever in the "Register" position, the Taxable Group, Amount Tendered, and Taxable Total keys are locked out.

A sale consisting of a Grocery Item of $1.00; a Taxable Grocery Item of $1.00; a Meat Item of $1.00; a Produce Item of $1.00; a Bakery Item of $.50; a Coupon of $.50; and a Bottle Refund of $1.00 is recorded by the operator in the following manner.

1. The operator indexes one of the clerk keys in Row 10 (Stay Down).

2. Index $1.00 on Amount Keyboard.

3. Depress the Grocery Motor Bar (motorized). The amount is added into the Grocery Total in the upper counter and into the plus pinions of the Main Itemizer. The amount is printed on the receipt and the Change-Balance Due key locked out on this operation.

A 01.00 GR

4. Index $1.00 on Amount Keyboard.

5. Depress Taxable Item key (non-motorized) in Row 2. Depress Grocery Motor Bar (motorized). Amount is added to the Grocery Total in the upper counter, the Taxable Itemizer in the lower counter. The lock on the Taxable Total key in Row 1 is unlocked and the red flash is indicated. The Total Key is locked out. The amount is printed on the receipt.

A 01.00 $\frac{TB}{IT}$ GR

6. Index $1.00 on Amount Keyboard.

7. Depress the Meat key (motorized) in Row 1. Amount is added into Meat Total in upper counter and into the plus pinions of the Main Itemizer. Amount is printed on receipt.

A 01.00 MT

8. Indes $1.00 on Amount Keyboard.

9. Depress Produce key (motorized) in Row 1. Amount is added into Produce Total in upper counter and into the plus pinions of the Main Itemizer. The amount is printed on the receipt.

A 01.00 PR

10. Index $.50 on the Amount Keyboard.

11. Depress Bakery key (motorized) in Row 1. Amount is added into Bakery Total in upper counter and into plus pinions of Main Itemizer. Printed on receipt.

A 00.50 BK

12. Index $.050 on Amount Keyboard.

13. Depress Coupon key (motorized) in Row 2. Amount is added into Coupon Total in upper counter and minus pinion of Main Itemizer. Amount is printed on the receipt.

A 00.50 CP

14. Index $1.00 on Amount Keyboard.

15. Depress Refund key (motorized) in Row 2. Amount is added to Refund Total in upper counter and into the minus pinions of the Main Itemizer. Amount is printed on receipt.

A 01.00 RE

16. Depress Taxable Total Key (Motorized) in Row 1. Taxable itemizer is reset and amount is added into the plus pinions of the Main Itemizer and Taxable Group in the upper counter. The red flash is restored and amount is printed on the detail but not the receipt. Total Key in Row 2 is unlocked.

179 A00001.00 $\frac{TX}{TL}$

17. Operator computes the Tax off indication and indexes $0.03 on amount keyboard.

18. Tax key (motorized) in Row 2 is depressed. Amount is added into Tax Total in upper counter. This is not to be confused with the Taxable Group. It is also added into the plus pinions of the Main Itemizer and printed on the receipt.

A 00.03 TX

19. Depress Total key (motorized) in Row 2. Reads the amount on the plus pinions of the Main Itemizer. Unlocks Change-Balance Due and Amount Tendered keys. This locks the Grocery Motor Bar out. (The Grocery Motor Bar may be unlocked by depressing the Tax Total-Add On Release key to permit additional Grocery item listings) The amount prints on both detail and receipt.

A 03.03 TL 179 A00003.03 TL

20. Index $5.00 on Amount Keyboard.

21. Depress Amount Tendered key (motorized) in Row 1. Adds to the minus side of the Main Itemizer and prints on both detail and receipt.

A 05.00 AM TD 179 A00005.00 AM TD

22. Depress Change-Balance Due key (motorized) in Row 1. Resets Main Itemizer and prints on both detail and receipt. Issues a long receipt.

A 01.97TL CG 179 A00001.97TL CG

Move Unit Lock Lever to the "Read Row 2 Grocery Motor Bar and Taxable Group" position. Clerk keys in Row 10 are released. The Amount Tendered Taxable Total and Taxable Item keys are locked out in this position.

1. Depress Grocery Motor Bar and amount is read in Grocery Total in upper counter and added into the plus side of the Main Itemizer. Locks Change-Balance Due Key and prints on both detail receipt.

X/2 02.00 GR 180 X/2 00002.00 GR

2. Depress Meat key and amount is read in Meat total in upper counter and added to the plus isde of the Main Itemizer. Amount is printed on both detail and receipt.

X/2 01.00 MT 180 X/2 00002.00 MT

3. Depress Produce key and amount is read in Produce total in upper counter and added to the plus side of the Main Itemizer. Prints on both detail and receipt.

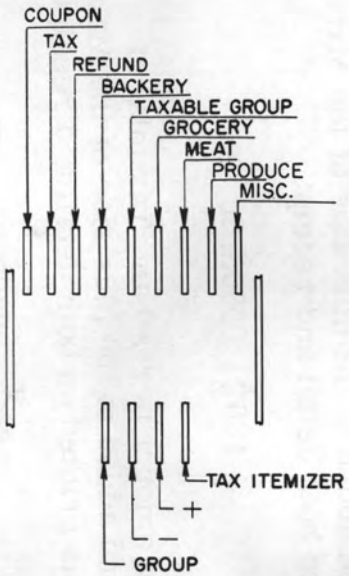
X/2 01.00 PR 180 X/2 00001.00 PR

4. Depress Bakery key and amount is read in Bakery total in upper counter and added to the plus side of the Main Itemizer. Prints on both detail and receipt.

X/2 00.50 BK 180 X/2 00000.50 BK

5. Depress Tax key and amount is read and Tax total of the upper counter and added to the plus side of the Main Itemizer. Amount is printed on both detail and receipt.

X/2 00.03 TX 180 X/2 00000.03 TX



READ GROUP
LOCKER REGISTER
REGISTER
READ RW 2 M BR-TX GP
RST RW2- & TAX GP
RST RW2+ & MTR BR

A
B
D
E

$900 $90 $9 90 9
8
7
6
5
4
3
2
$100 $10 $1 10 1

MEAT
TAXABLE ITEM
PRODUCE
MISC.
BAKERY
REFUND
TAX
COUPON
TAXABLE GROUP

AMOUNT TENDERED
TOTAL
GROCERY
TAX TOTAL ADD ON RELEASE
N S CHANGE BAL.DUE

REST	GROC	MEAT	PROD	MISC	BAKERY	REFUND	TAX	COUPON		ITEM
									NS	CUST

52D-S-10-5-IL (CCX) CC-TC-IC-SI-CS-I

6. Depress Total key. Reads plus side of Main Itemizer, unlocks Change-Balance Due key. Prints on both detail and receipt.

$\overset{X}{2}$ 04.53 TL $180\overset{X}{2}$ 00005.53 TL

This operation represents a Collecting Group of the gross Sales.

7. Depress Refund key. Reads amounts in Refund Total in upper counter and adds to the minus side of the Main Itemizer. Locks out Change-Balance Due key and prints on both detail and receipt.

$\overset{X}{2}$ 01.00 RE $180\overset{X}{2}$ 00001.00 RE

8. Depress Coupon Key. Reads the amount in the Coupon Total in the upper counter and adds to the minus side of the Main Itemizer. Prints on both detail and receipt.

$\overset{X}{2}$ 00.50 CP $180\overset{X}{2}$ 00000.50 CP

9. Depress Total Key. Reads plus side of the Main Itemizer and unlocks Change-Balance Due key. Amount is printed on both detail and receipt.

$\overset{X}{2}$ 03.03 TL $180\overset{X}{2}$ 00004.03 TL

10. Depress Change-Balance Due key. Reset plus side of Main Itemizer and unlocks the Unit Lock Lever. Prints on both detail and receipt and issues a long receipt.

$\overset{X}{2}$ 03.03 $\overset{BL}{DU}$ $180\overset{X}{2}$ 00004.03 $\overset{BL}{DU}$

This operation represents a Collecting Group total of all Net Sales.

11. Depress Taxable Group key. Reads the Taxable Group Total in the upper counter and adds to the plus side of the Main Itemizer. Locks the Unit Lock Lever and Change-Balance Due key. Prints on both receipt and detail.

$\overset{X}{2}$ 01.00 TG $181\overset{X}{2}$ 00001.00 TG

12. Depress Total key. Reads plus side of Main Itemizer. Prints on receipt and detail and unlocks Change-Balance Due key.

$\overset{X}{2}$ 01.00 TL $181\overset{X}{2}$ 00001.00 TL

13. Depress Change-Balance Due key. Resets plus side of Main Itemizer and unlocks Unit Lock Lever. Prints on detail and receipt and issues a long receipt.

$\frac{X}{2}$ 01.00$\frac{BL}{DU}$ 181$\frac{X}{2}$ 00001.00$\frac{BL}{DU}$

Items 13 through 15 are done in order to receive a total of the Taxable Group. If this amount was added into the Collecting Group along with the other totals of the upper counter, the Net Collecting Group Total would be incorrect.

Move the Unit Lock Lever to the "Reset Row 2 - Taxable Group" position. All the keys except Coupon, Refund, and Taxable Group are locked out. The Coupon and Refund and Taxable Group keys are depressed in order that their respective totals in the upper counter will be reset to zero. All totals print on the detail and receipt and issues a long receipt.

Move Unit Lock Lever to the "Reset Row + Grocery Motor Bar" position. Amount Tendered, Total, Tax Total, Change-Balance Due, Coupon, Refund and Taxable Group keys are locked out. By depressing Meat, Produce, Grocery Motor Bar, Miscellaneous and Tax keys, the respective totals in the upper counter will be reset to zero. The amount of each total will be added into the group pinions in the lower counter. The amounts print on both detail and receipt and issue a long receipt.

Move the Unit Lock Lever to the "Read Group" position. All keys except the Total key are locked out. By depressing the Total key, the Group total in the lower counter will be read. Prints on the detail and receipt and issues a long receipt.

$\frac{X}{1}$ A74613.47TL CG 189$\frac{X}{1}$ A74613.47TL CG

NOTE: Since Row 10 is a print key bank, the Row 10 type wheel is engraved with letters in the position corresponding to the clerk keys in Row 10. The remaining positions are engraved with numerals. In the Read Group position, the clerk keys are not in control and this bank acts as any other amount bank. If the accumulation on the counter pinion is great enough, the amount in Row 10 will be printed as a letter. The position of the corresponding key will determine the amount in Row 10.

As an example: The A Clerk key is in the 8 position of Row 10. Therefore since the A was printed as part of the Group Total, the amount in Row 10 is 8.

Explanation of Size Numbers

52-
First two digits followed by dash designates Class of machine.

52D-
The letter D when immediately following Class indicates the machine is constructed with Change Dispenser.

52D-1-
The numeral 1 following the letter D indicates a standard constructed model.

52D-S-
The letter S indicates the machine is constructed other than a standard Model.

52D-S-10-
The digit following the item number of letter S represents the number of totals.

52D-S-10-5-
The next number in the series followed by a dash designates number of amount banks.

52-D-S-10-5-1L
The absence of the designation of number of print rows indicates the machine is constructed without print rows. When one print row is required 1L or 1R will be used in the size number of amount banks to designate whether the print row is constructed to the left or right of the keyboard. Two print rows will be designated by the size number by 2 or 2R following the number of amount banks.

52D-S-10-5-1L(CCX)
The printers are designated by three letters enclosed in parenthesis in the following order;

The first letter describes the detail printer.

X-No Detail Printer.

B-Wide (2 1/2) detail printer without consecutive numbers.

C-Wide (2 1/2) detail printer with consecutive numbers.

D-Narrow detail printer without consecutive numbers.

The second letter described the receipt printer.

X-No receipt printer.

B-Narrow (1-5/8) receipt printer with itemized receipts.
(7X Printer)

C-Intermediate (1-7/8) receipt printer with itemized receipt.

The third letter describes the slip printer.

X- No slip printer.

B-Single impression-Prints totals only, regular size type.
maximum type line:
1 wide or 2 narrow transaction
eight amounts
X and Z
Four wheel consecutive number
full date: months, day, and year
three wheel register number
slip feed from back to front.

C-Single impression prints items and totals, regular size type,
maximum typeline:
one wide or two narrow transaction,
eight amounts,
X and Z,
four wheel consecutive number,
full date: months, day, and year,
three wheel register number,
consecutive slip feed front to back.

D-Single impression prints totals only.
Bold face amounts, (5 wheels), zeros cut off remainder,
maximum type line
one wide or two narrow transaction
eight amounts
X and Z
four wheel consecutive number
date: month, day - year omitted
optional typeline
consecutive number and date can be omitted.
slip feed from back to front.

F-Single impression prints items and totals
bold face amounts (5 wheels), zeros cut off remainder
maximum typeline
one wide or two narrow transaction
eight amounts
X and Z
four wheel consecutive number
date: month and day, year omitted
optional typeline: consecutive number and date can be omitted
consecutive feed feeds front to back.

G-Double impression prints totals only
automatic single impression out of register position
regular size type
maximum typeline
one wide or two narrow transaction
eight amounts
X and Z
four wheel consecutive number
full date: month, day, and year
three wheel register number
slip feed from back to front
maximum feed 2 3/8.

H-Double impression prints totals only
automatic single impression out of register position
bold face amounts, (5 wheels)zeros cut off remainder
maximum typeline
one wide or two narrow transaction
eight amounts
X and Z
four wheel consecutive number
date: month, day and year omitted
optional typeline: consecutive number and date to be omitted
slip feed from back to front
maximum feed 2"-3".

K-Single impression
two column slip printer
regular size type
maximum typeline
two character transactions
right typeline
eight amounts
X and Z
one or two transactions
left type wheel line
six amounts
slip feeds from front to back.

L-Single impression
two column slip printer
bold face type
maximum typeline
one two character transaction
six amount
X and Z
right type wheel line
bold face type
one transaction
left type wheel line
five amount wheels
bold face type

M-Right side slip printer
prints totals only
typeline remains the same as the receipt with date and
electro print optional
Slip does not feed.

N-Right side slip printer prints items and totals
Electro and date print optional
Typeline is the same as receipt typeline.

Miscellaneous Features

Miscellaneous features are designated in the size number following the printer designation.

AS - Add subtract counter.

CC - Change computation.

SI - Selective Itemization.

L - Illuminated Indication.

TC - Transaction Counters.

IC - Item Counters.

CS - Clear Signal.

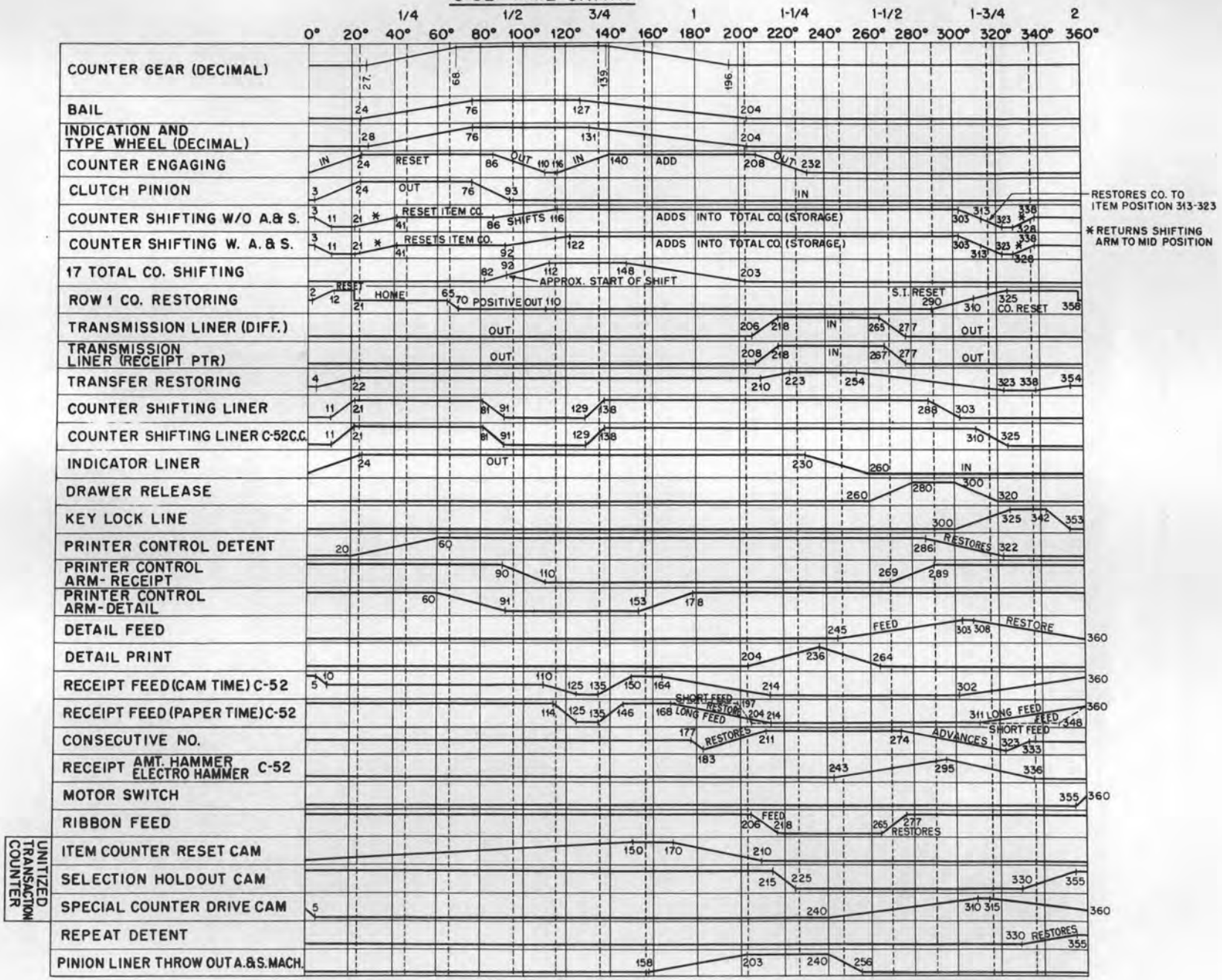
1PK - One Print Key.

Cash Drawers

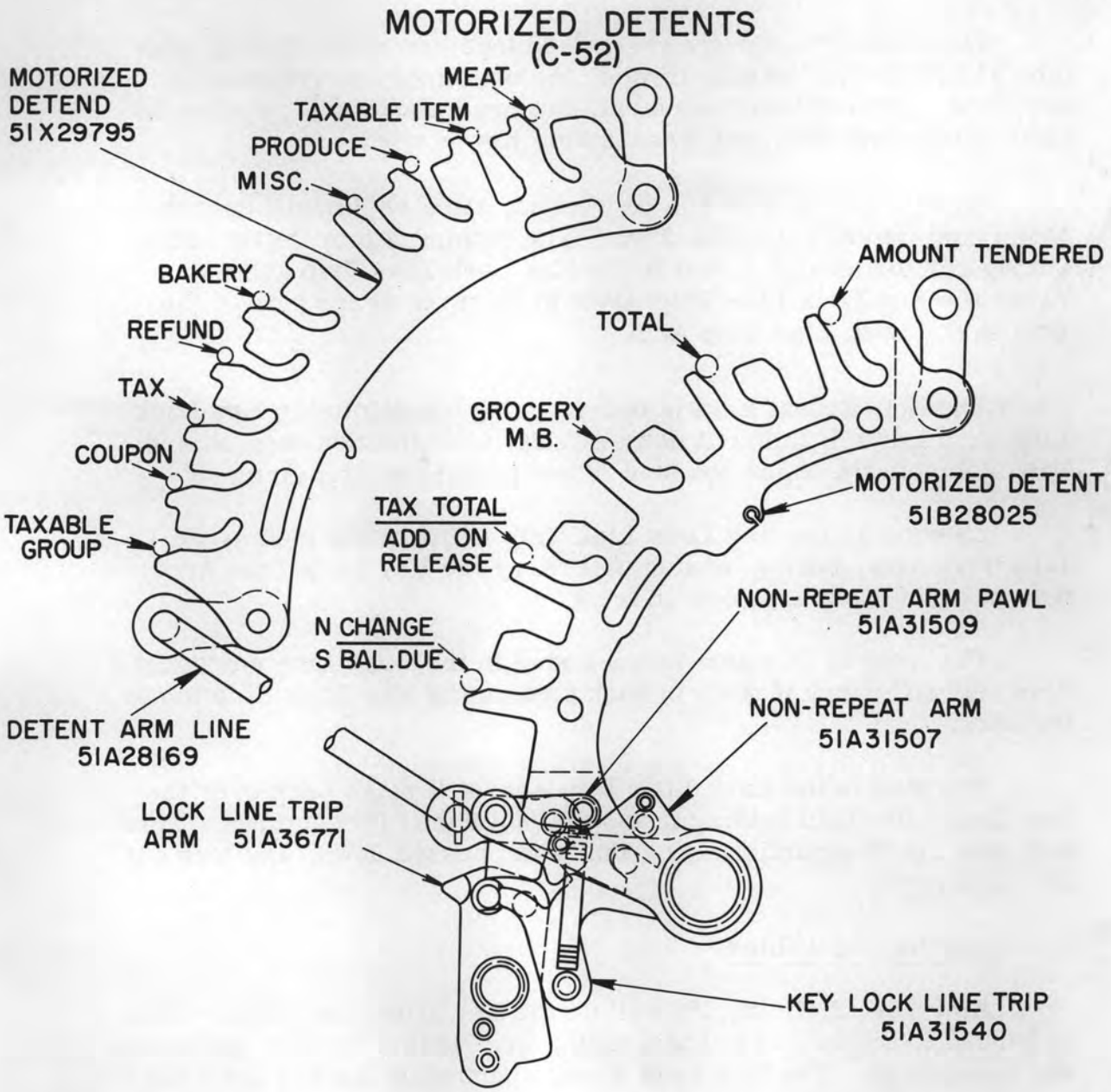
The number of cash drawers are designated in the size number following the Feature Identification.

If the cash drawer is constructed in two tiers, the figure 2 will appear immediately after the number of cash drawers. No designation is included for single tier construction. Example: 4-2. This indicates four drawers on a two-tier base.

C-52 TIME CHART



SECTION "B".



MACHINE RELEASE

Tripping the Key Lock Line

The Key Lock Line is retained in its home position by the stud in the Lock Line Trip Arm resting against the front end of the Key Lock Line Trip.

There are two Motorized Detents in the Transaction Key Bank. The Motorized Detent 51B28025 is operated by Row 1 keys and the Motorized Detent 51X29795 is operated by Row 2 keys.

These two Detents are assembled together by the Detent Arm Line 51A28169 that extends through the bottom of the Transaction Key Bank. With this arrangement, the two Detents will receive the same movememt when any Transaction Key is used.

When a key in Row 1 is depressed, the Key Pin will cam the Motorized Detent 51B28025 down. The bottom of this Detent has a yoking portion around a stud in the Key Lock Line Trip and will carry the Key Lock Line Trip down in front out of the path of the stud in the Lock Line Trip Arm.

The Non-Repeat Arm is under spring tension to the Key Lock Line Trip and will follow it down slightly until the Non-Repeat Arm Pawl contacts the top of the stud in the Lock Line Trip Arm.

As soon as the Key Lock Line Trip is below the stud in the Lock Line Trip Arm, spring tension will carry the Key Lock Line Arm bottom to the back and down in front.

The front of this arm yokes a stud in the Lock Line restoring Arm and will carry it down in back turning the Key Lock Line top to the back.

The stud in the Lock Line Trip Arm will move back over the Key Lock Line Trip holding it and the Motorized Detent down. This will lock the Transaction Key that was pressed down, and lock out all other keys.

Restoring Key Lock Line

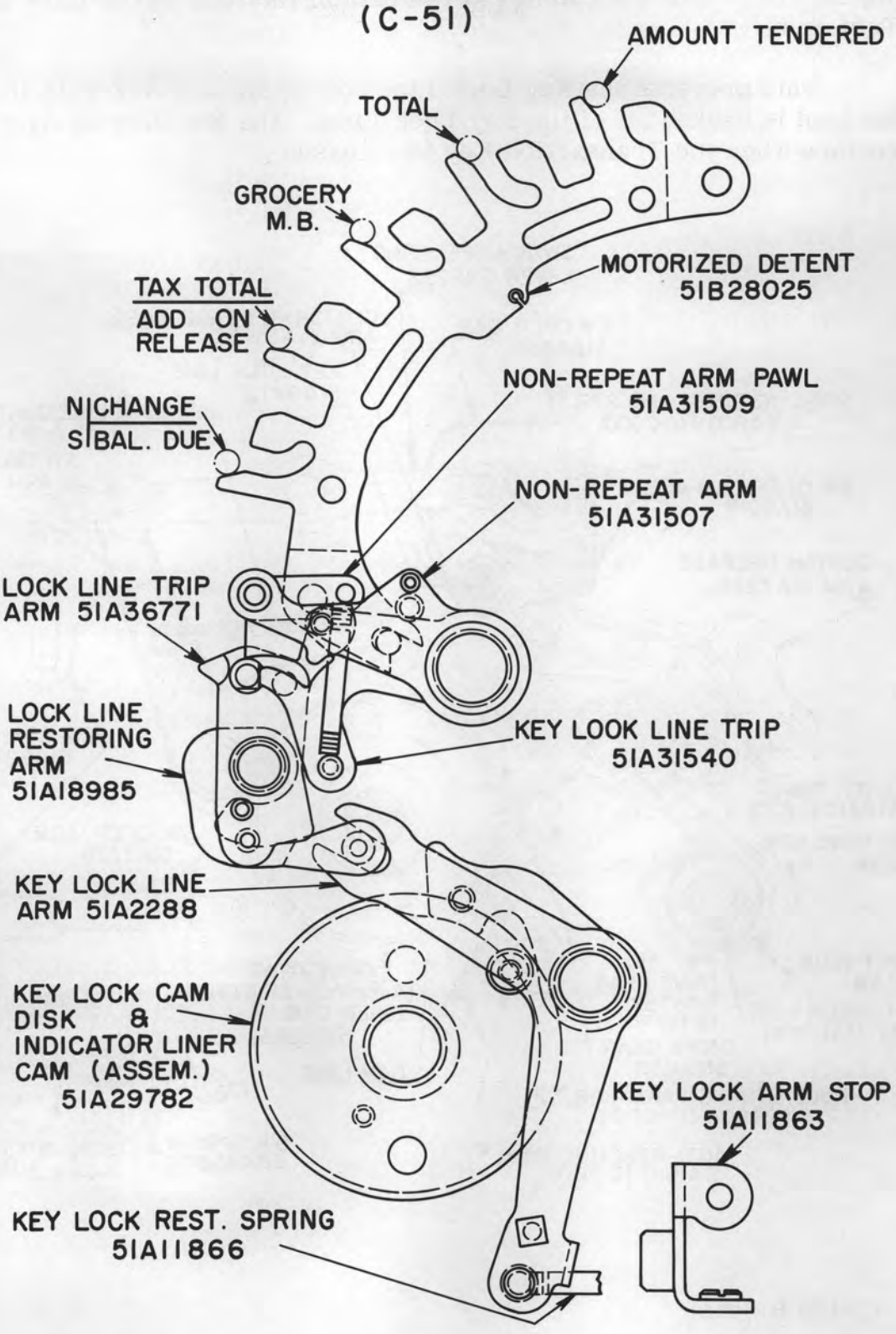
At 1-3/4 T. O. H. the roll on the Key Lock Cam Disc, which is hubbed to the Indicator Liner Cam, will contact the Key Lock Arm and carry it up. The Key Lock Arm is hubbed to the Key Lock Line Arm and will carry it up in front. This will raise the Lock Line Restoring Arm up in back and turn the Key Lock Line top to the front.

The stud in the Lock Line Trip Arm will be carried to the front with lead, past the end of the Key Lock Line Trip. When this happens, spring tension will restore the Motorized Detents, which will raise the Key Lock Line Trip up in Path of the Stud in the Lock Line Trip Arm.

Also as the Motorized Detents restore, the Key Spring will restore the Key.

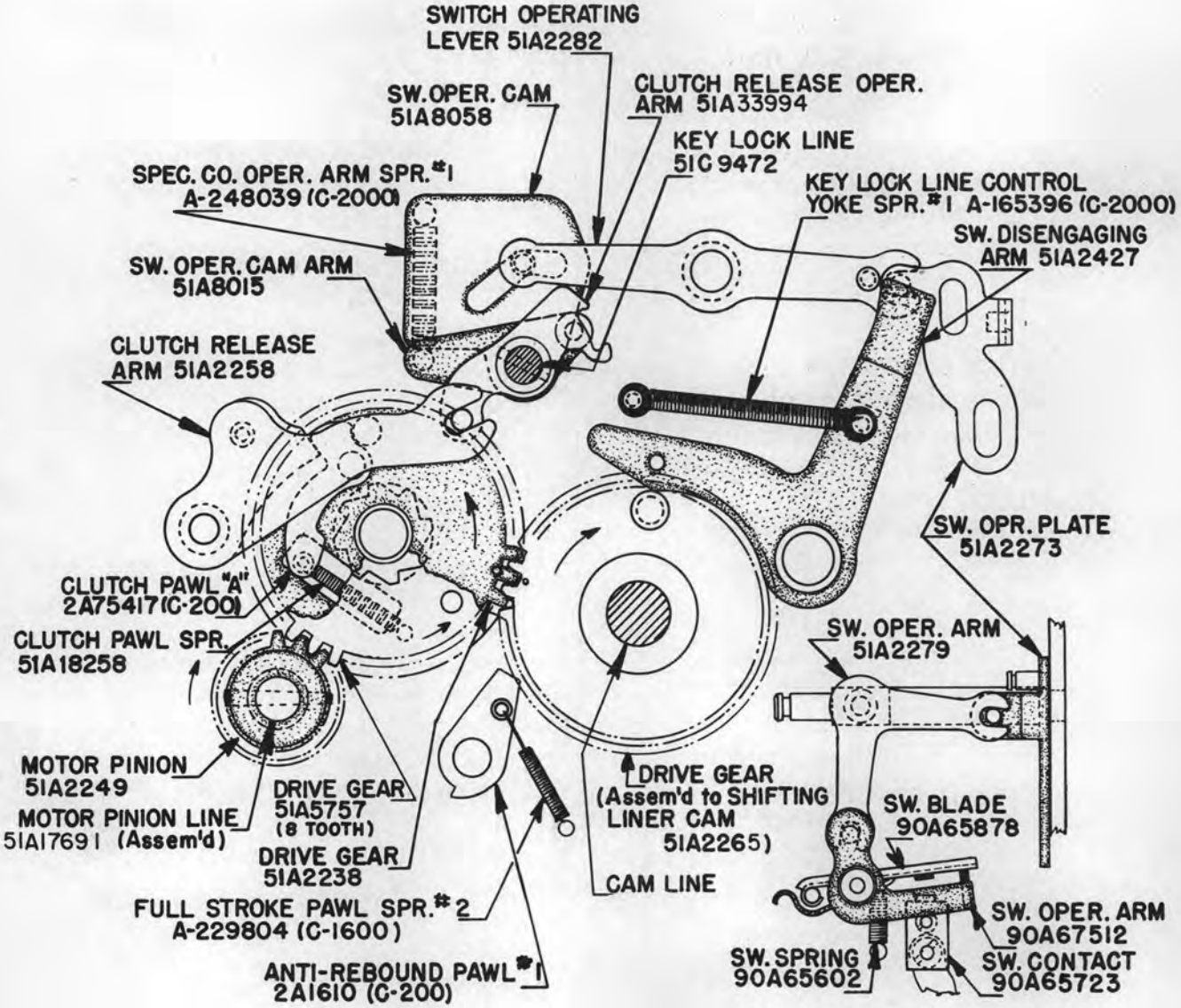
At 1-7/8 T. O. H. the roll on the Key Lock Cam Disc will move away from the Key Lock Arm and spring tension on the Key Lock Line Arm will carry it bottom to the back. This will turn the Key Lock Line top to the back until the stud in the Lock Line Arm contacts the Key Lock Line Trip.

KEY LOCK LINE
TRIPPING - RESTORING
(C-51)



If the Transaction Key is held down at the time the Key Lock Line restores, the Non-Repeat Pawl Spring will pull the Non-Repeat Arm down, placing the Non-Repeat Arm Pawl in path of the stud in the Lock Line Trip Arm.

This prevents the Key Lock Line retripping at 1-7/8 T. O. H. when the lead is backed off of the Key Lock Line. The Non-Repeat Arm will restore when the Transaction Key is released.


SWITCH OPERATING LEVER 51A2282
SW. OPER. CAM 51A8058
CLUTCH RELEASE OPER. ARM 51A33994
KEY LOCK LINE 51C9472
SPEC. CO. OPER. ARM SPR. #1 A-248039 (C-2000)
KEY LOCK LINE CONTROL YOKE SPR. #1 A-165396 (C-2000)
SW. DISENGAGING ARM 51A2427
SW. OPER. CAM ARM 51A8015
CLUTCH RELEASE ARM 51A2258
SW. OPR. PLATE 51A2273
CLUTCH PAWL "A" 2A75417 (C-200)
CLUTCH PAWL SPR. 51A18258
SW. OPER. ARM 51A2279
MOTOR PINION 51A2249
MOTOR PINION LINE 51A17691 (Assem'd)
DRIVE GEAR 51A5757 (8 TOOTH)
DRIVE GEAR 51A2238
DRIVE GEAR (Assem'd to SHIFTING LINER CAM 51A2265)
SW. BLADE 90A65878
CAM LINE
FULL STROKE PAWL SPR. #2 A-229804 (C-1600)
SW. OPER. ARM 90A67512
SW. SPRING 90A65602
SW. CONTACT 90A65723
ANTI-REBOUND PAWL #1 2A1610 (C-200)

Clutch Release

As the Key Lock Line trips, the Motor Contact will be closed and the Clutch released.

The Switch Operating Cam Arm is pinned to the left end of the Key Lock Line and will be carried down in back as the Key Lock Line Trips.

A Spring Stud in the front of the Switch Operating Cam Arm is under the Switch Operating Cam, which is swung on the Key Lock Line, and will carry it top to the back also.

The raceway in the Switch Operating Cam will cam the Switch Operating Lever down in front. The back of this lever yokes a stud in the Switch Operating Plate and will carry it up.

Through the connections of the Switch Operating Arm 51A2279, the Switch Operating Arm 90A61512 will be carried down on the right allowing the Switch Blade to close by spring tension.

The Clutch Release Operating Arm is also pinned to the Key Lock Line and will be carried top to the back as the Key Lock Line trips. The stud in the front of the Release Operating Arm will raise the Clutch Release Arm up in back, taking the extension out of the path of the Clutch Pawl which is swung on the (left) Drive Gear 51A2238.

Spring tension on the Clutch Pawl will now pull it bottom to the back to engage the ratchet on the (Right) Drive Gear 51A5757. This Drive Gear is driven directly from the motor and as soon as the Clutch Pawl engages the ratchet, the (left) Drive Gear will start to turn also.

The (left) Drive Gear is in mesh with the Drive Gear 51A2265, pinned to the main Cam Line, and will turn this Gear and Cam Line top to the back.

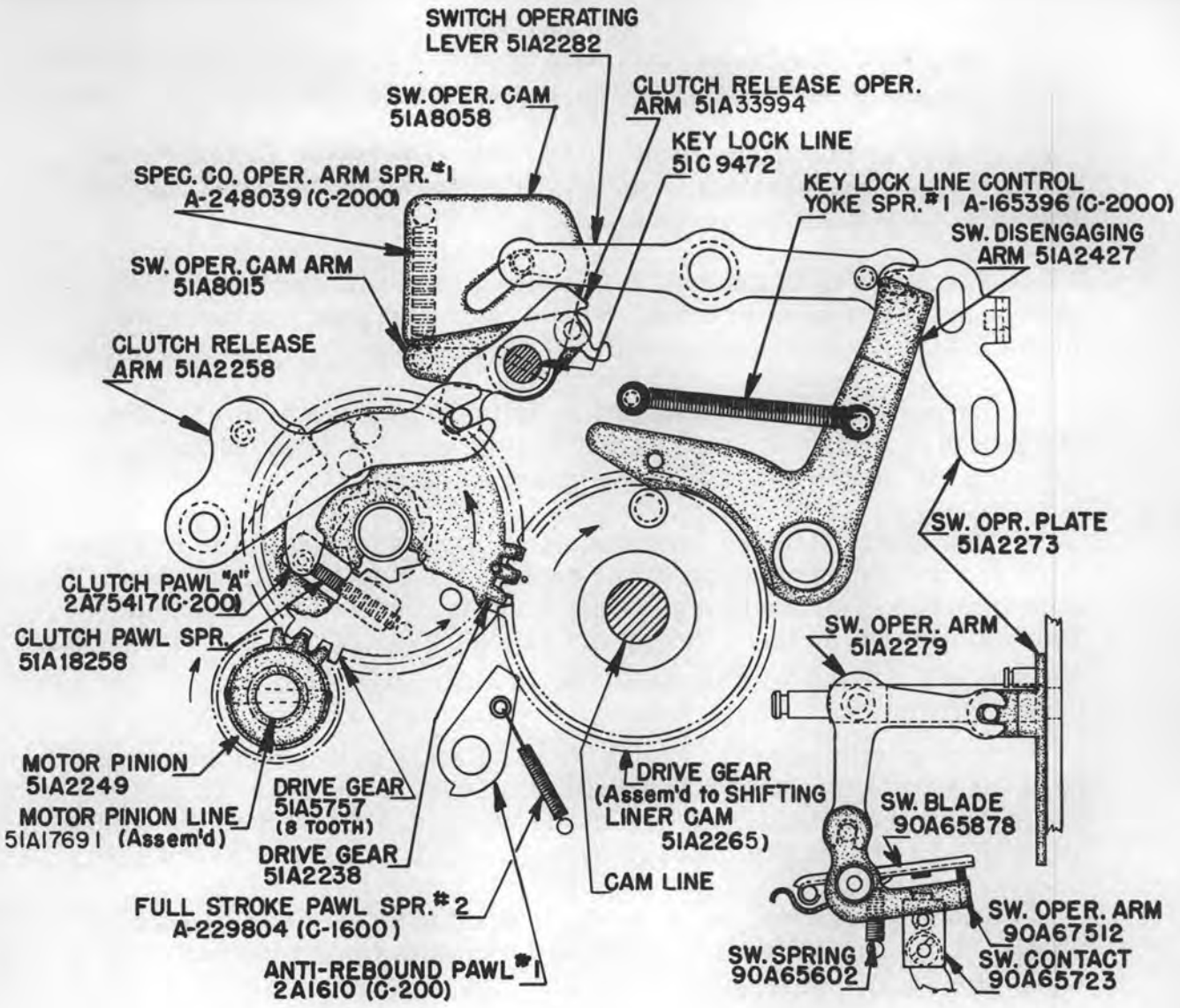
The stud on the Drive Gear 51A2265 will move away from the camming surface of the Switch Disengaging Arm and spring tension will pull this arm top to the front. This places the top of the Switch Disengaging Arm underneath a stud in the Switch Operating Lever, which extends through an elongated hole in the left side frame.

The Motor Contact Switch will now be held closed until just before 2 T. O. H.

Clutch Restoring

At 1-3/4 T. O. H., as the Key Lock Line restores, the Clutch Release Operating Arm is moved down in front. This will carry the Clutch Release Arm down in back placing the extension, on the left side, in path of the Clutch Pawl "A".

The Switch Operating Cam Arm will also be carried top to the front and will stretch the Spring between it and the Switch Operating Cam.


SWITCH OPERATING LEVER 51A2282
SW. OPER. CAM 51A8058
CLUTCH RELEASE OPER. ARM 51A33994
KEY LOCK LINE 51C9472
SPEC. CO. OPER. ARM SPR. #1 A-248039 (C-2000)
KEY LOCK LINE CONTROL YOKE SPR. #1 A-165396 (C-2000)
SW. DISENGAGING ARM 51A2427
SW. OPER. CAM ARM 51A8015
CLUTCH RELEASE ARM 51A2258
SW. OPR. PLATE 51A2273
CLUTCH PAWL "A" 2A75417 (C-200)
CLUTCH PAWL SPR. 51A18258
SW. OPER. ARM 51A2279
MOTOR PINION 51A2249
MOTOR PINION LINE 51A17691 (Assem'd)
DRIVE GEAR 51A5757 (8 TOOTH)
DRIVE GEAR 51A2238
DRIVE GEAR (Assem'd to SHIFTING LINER CAM 51A2265)
SW. BLADE 90A65878
CAM LINE
FULL STROKE PAWL SPR. #2 A-229804 (C-1600)
SW. OPER. ARM 90A67512
SW. SPRING 90A65602
SW. CONTACT 90A65723
ANTI-REBOUND PAWL #1 2A1610 (C-200)

Between 1-7/8 and 2 T. O. H., the tail of the Clutch Pawl "A" will contact the Clutch Release Arm and pull the nose of the pawl out of the Ratchet Gear.

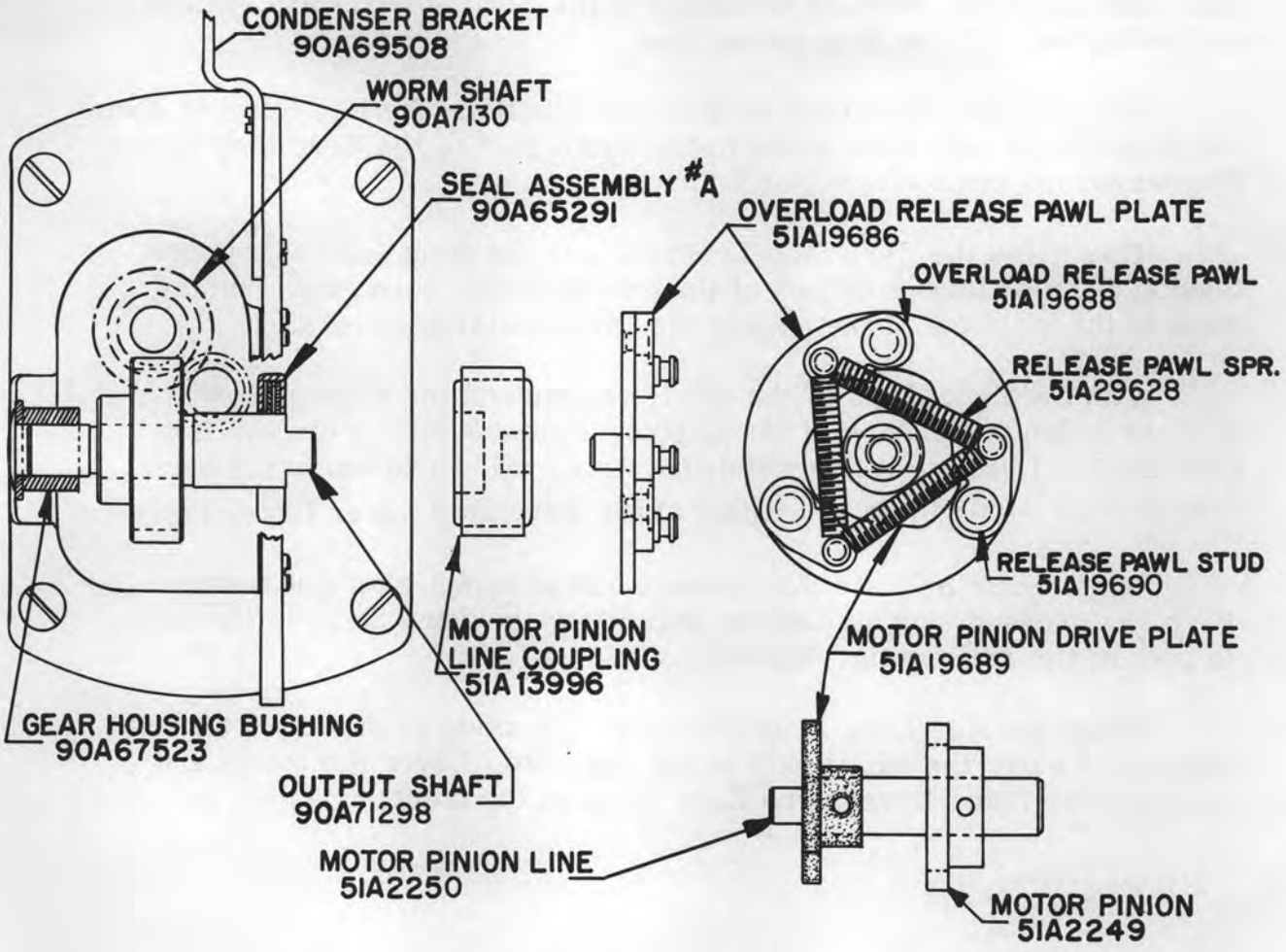
The tail of the Clutch Pawl "A" will now move top to the back until it is contacted by a stud in the Drive Gear 51A2238. This will stop the Drive Gear and cam line in the correct home position.

As the Clutch Pawl is disengaging, the stud on the Drive Gear 51A2265 will cam the Switch Disengaging Arm top to the back, away from the stud in the Switch Operating Lever.

Spring tension will now turn the Switch Operating Cam top to the front and through the connections of the Switch Operating Lever, Switch Operating Plate and Switch Operating Arms, raise the Switch Blade up to break contact to the Motor.

The Anti-Rebound Pawl #1 is used to prevent the Cam Line Rebounding when it is stopped in the home position.

MOTOR OVERLOAD RELEASE



MOTOR - OVERLOAD - RELEASE

The Motor Overload Release is used to prevent Field Coils being burned out in the event the machine should ball-up.

Power is transmitted from the Motor to the Overload Release Pawl Plate by the Motor Pinion Line Coupling 51A13996. This coupling also acts as an Electrical Insulator between the Motor and Machine.

In the event of a ball-up in the machine, the Motor pinion line and Motor pinion drive plate will be stopped. Since the Overload Release Pawl Plate is being driven from the Motor, it will continue to turn forcing the Overload Release Pawl Springs to flex to allow the Overload Release Pawls to ratchet over the Release Pawl Plate.

This results in a loud noise which warns the operator to pull the cord plug.

ZERO STOP CONTROL

The Key Release Arms are pinned to the Key Lock Line and have studs at the top that work in raceways of the Zero Stop Levers, which are swung on the Zero Stop Lever Line.

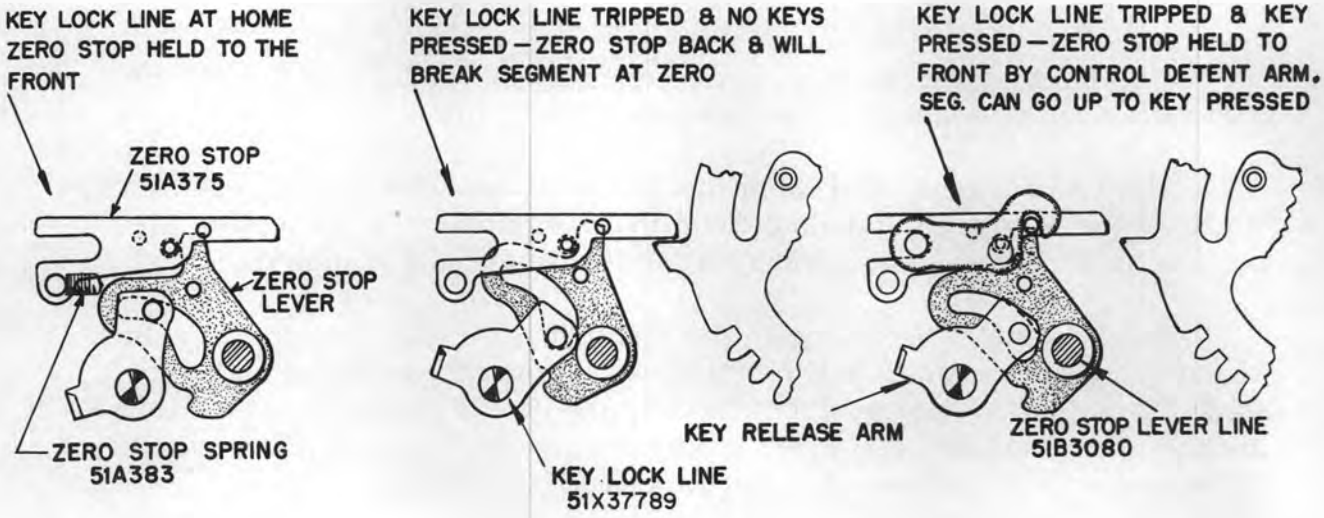
With the Key Lock Line in the home position, the Key Release Arms are to the front with their studs in the small part of the Zero Stop Lever Raceways.

This holds the Zero Stop Levers top to the front and the top extension of these levers will be against studs in the Zero Stops holding them to the front out of the path of the Differential Segments.

With the Zero Stops to the front, the stud on the right side will be directly below the hook of the Control Detent Arm. When the Key Lock Line is tripped, the Key Release Arms will move top to the back placing their studs in the wide part of the Zero Stop Lever Raceways.

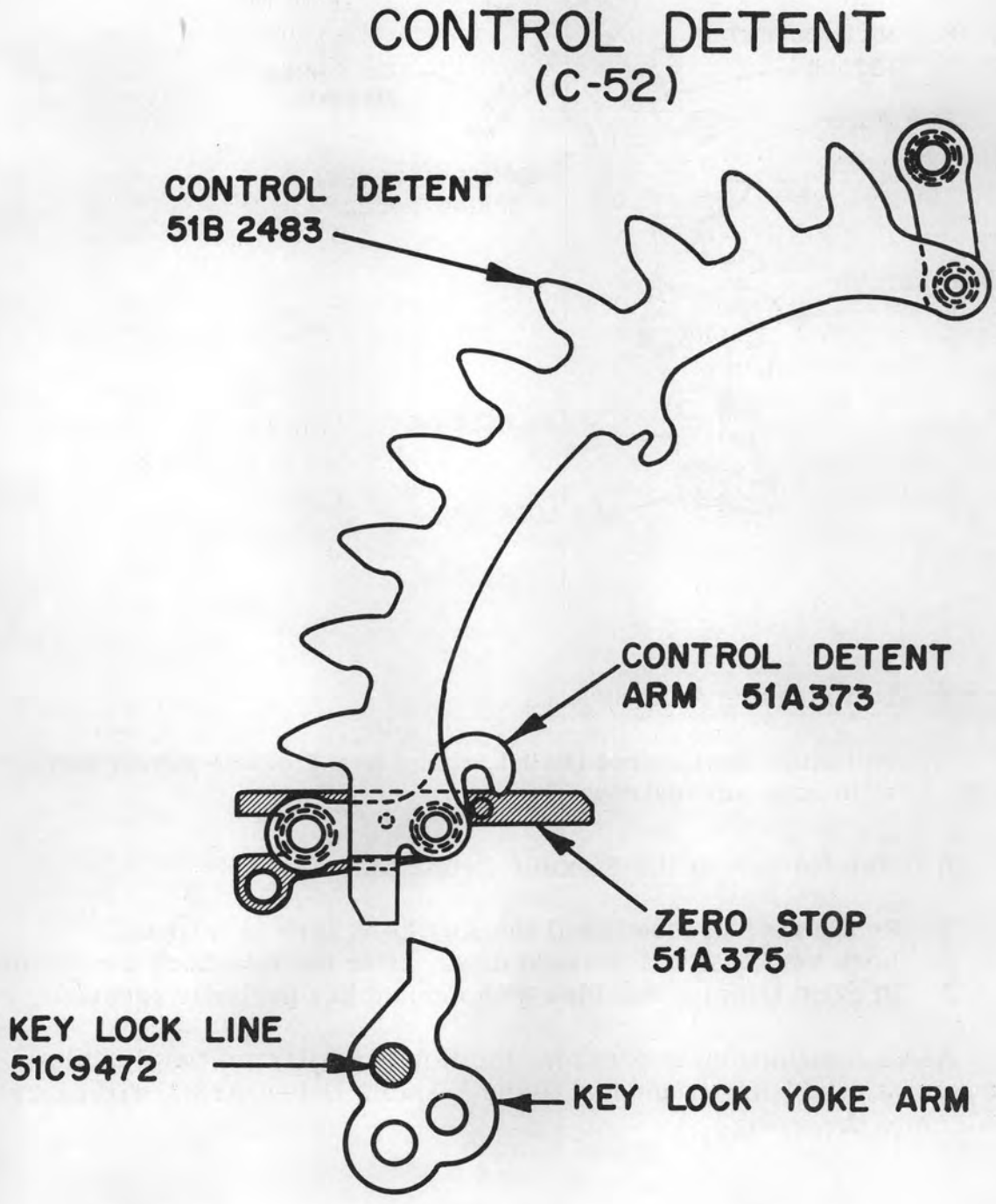
This frees the Zero Stop Levers and in banks where no amount keys are pressed, spring tension will carry the Zero Stops to the back in path of the Differential Segments.

When the Key Lock Line restores, the studs in the Key Release Arms will enter the small part of the Zero Stop Lever Raceways and cam the Zero Stop Levers and Zero Stops to the front.

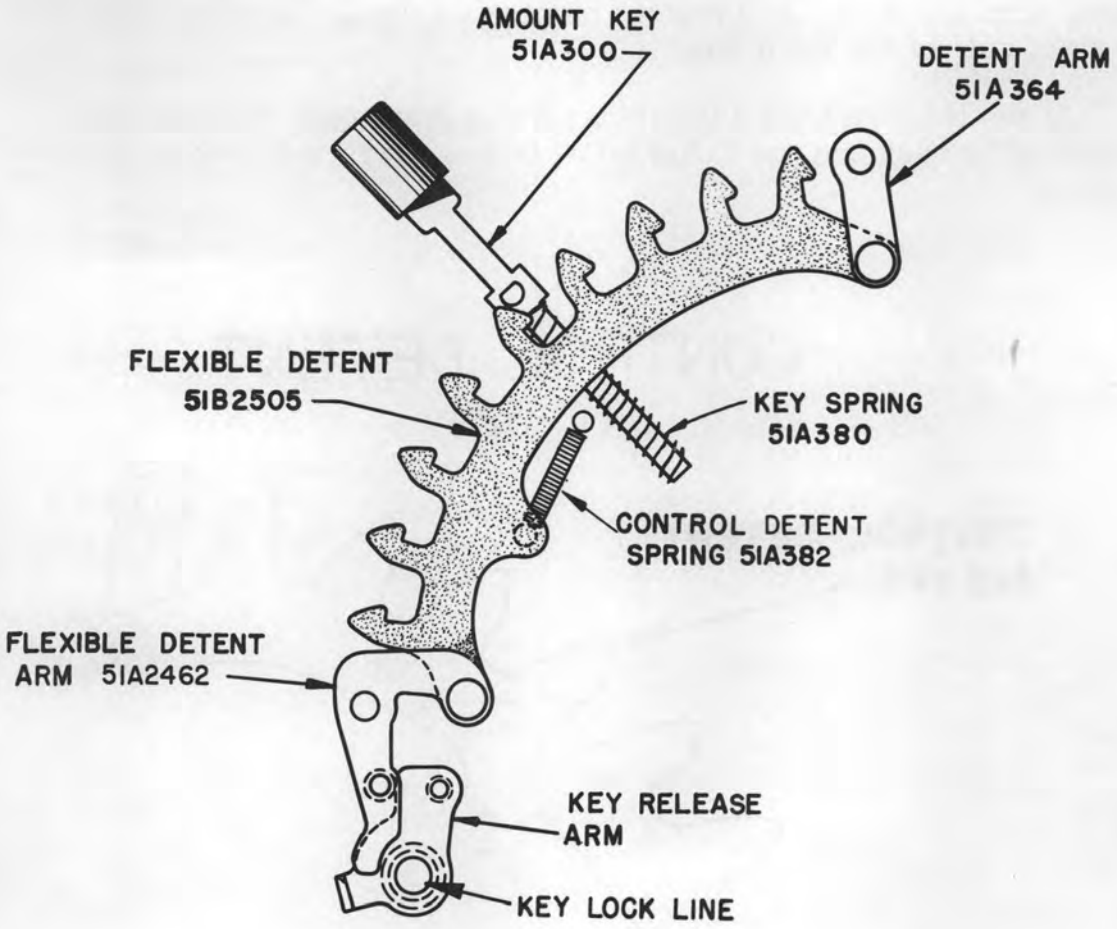

KEY LOCK LINE AT HOME ZERO STOP HELD TO THE FRONT
ZERO STOP 51A375
ZERO STOP LEVER
ZERO STOP SPRING 51A383
KEY LOCK LINE TRIPPED & NO KEYS PRESSED—ZERO STOP BACK & WILL BREAK SEGMENT AT ZERO
KEY RELEASE ARM
KEY LOCK LINE 51X37789
KEY LOCK LINE TRIPPED & KEY PRESSED—ZERO STOP HELD TO FRONT BY CONTROL DETENT ARM. SEG. CAN GO UP TO KEY PRESSED
ZERO STOP LEVER LINE 51B3080

When an amount key is pressed, the Key Pin will cam the Control Detent down. This Detent is connected, at the bottom, to the Control Detent Arm and will carry it down placing its "hook" over the stud in the right side of the Zero Stop.

When the Key Lock Line trips on this operation, the Zero Stop cannot move back and the Differential Segment will move up to the key pressed.



(C-52)



Locking and Releasing Amount Keys

In addition to the Control Detent, there is a Flexible Detent and Detent Arm in each amount row.

It is the function of the Flexible Detent to:

1. Retain keys pressed until the Key Lock Line is tripped.
2. Lock keys that are pressed down, after the Key Lock Line trips.
3. Prevent tripping machine with amount key partially pressed.

As an Amount Key is pressed, the Key Pin will cam the flexible detent down, and being connected to the Flexible Detent Arm, will carry it bottom to the front.

With the Flexible Detent Arm bottom to the front, it is over the turned over extension of the Key Release Arm. This would prevent the Key Lock Line tripping at this time.

After the key is fully depressed, spring tension will restore the Flexible Detent which will carry the Flexible Detent Arm bottom to the back away from the turned over extension of the Key Release Arm.

As the Key Lock Line Trips, the turned over extension will move up in front of the Flexible Detent Arm. This prevents the Flexible Detent Arm being moved bottom to the front, locking down the key that is pressed.

When the Key Lock Line restores with lead, the Key Release Arm will contact the stud on the Flexible Detent Arm and carry it bottom to the front. The Flexible Detent will be carried down away from the key pin of the key pressed and Spring tension will restore the key.

As the lead is backed off of the Key Lock Line, spring tension on the Flexible Detent will restore it and the Detent arm to their home position.

Row 10 - Detents

Row 10 has two detents which are the Control and Flexible Detents.

As a key is pressed, the Control Detent will be cammed down the bank by the Key Pin. A stud in the Detent Arm will carry the Control Detent Arm bottom to the front away from the turned over extension of the Key Release Arm allowing the Key Lock Line to be tripped.

Also as a key is pressed, the Key Pin will cam the Flexible Detent down and carry the Flexible Detent Arm bottom to the front over the turned over extension of the Key Release Arm.

With the Key fully depressed spring tension will restore the Flexible Detent with the "hook" over the Key Pin just pressed.

As the Key Lock Line trips, the Key Release Arm is carried top to the back and the turned over extension will move up in front of the Flexible Detent Arm locking down the Key pressed.

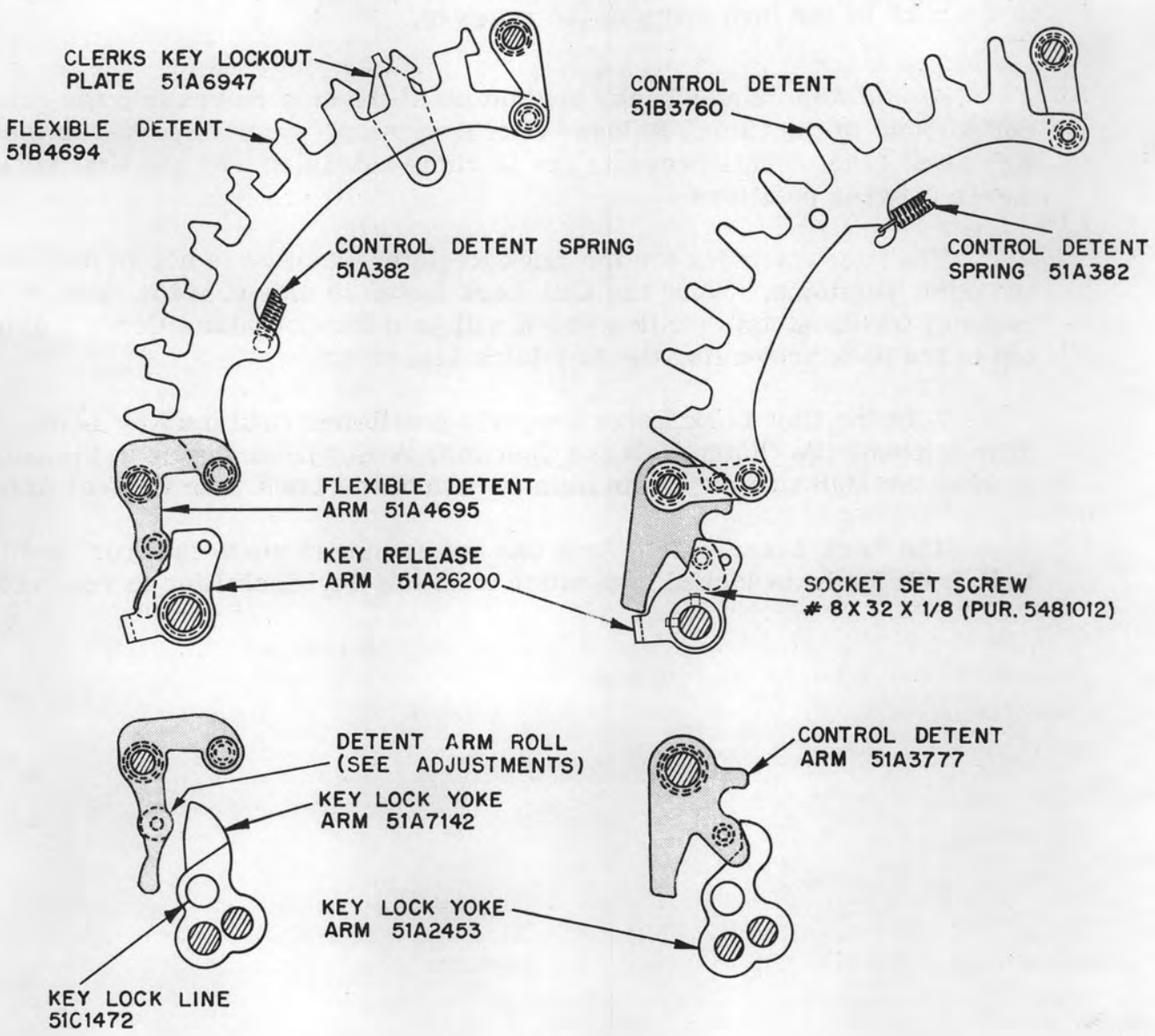
When the Key Lock Line restores, the Key Release Arm will not contact the stud in the Flexible Detent Arm. The Key pressed will remain down until either another key is pressed or the Unit Lock Lever is moved out of the register position.

With the Unit Lock Lever out of the Register position, the Control Detent Arm is held bottom to the front by the Key Lock Yoke arm 51A2453, to allow the Key Lock Line to trip without a Row 10 key pressed. The Flexible Detent Arm is carried bottom to the front by the Key Lock Yoke Arm 51A7142.

This will move the Flexible Detent down, releasing any keys that were pressed and locking out Row 10 keys with the unit Lock Lever out of register.

Since the Row 10 keys can only be released by moving the Unit Lock Lever or by pressing another key, the Clerk's Key Lockout Plate is provided to prevent all Row 10 keys being pressed at the same time.

ROW 10 DETENTS
(C-52)


CLERKS KEY LOCKOUT PLATE 51A6947
FLEXIBLE DETENT 51B4694
CONTROL DETENT SPRING 51A382
FLEXIBLE DETENT ARM 51A4695
KEY RELEASE ARM 51A26200
CONTROL DETENT 51B3760
CONTROL DETENT SPRING 51A382
SOCKET SET SCREW # 8 X 32 X 1/8 (PUR. 5481012)
DETENT ARM ROLL (SEE ADJUSTMENTS)
KEY LOCK YOKE ARM 51A7142
KEY LOCK YOKE ARM 51A2453
KEY LOCK LINE 51C1472
CONTROL DETENT ARM 51A3777

Unit Lock Lever

The Unit Lock Lever is retained in its various positions by the Lock Line Control Arm. This arm is swung on a stud in the side frame and held top to the front by the Control Arm Spring. A stud in the Arm rides in the Raceway of the Unit Lock Lever, and as the Lever is moved from one position to another, the Lock Line Control Arm will be cammed top to the back by the high spots of the raceway.

As the Arm moves back, the bottom of the arm moves into the cut-out portion of the Clutch Release Operating Arm, which is pinned to the Key Lock Line. This prevents the Machine releasing with the Unit Lock Lever between positions.

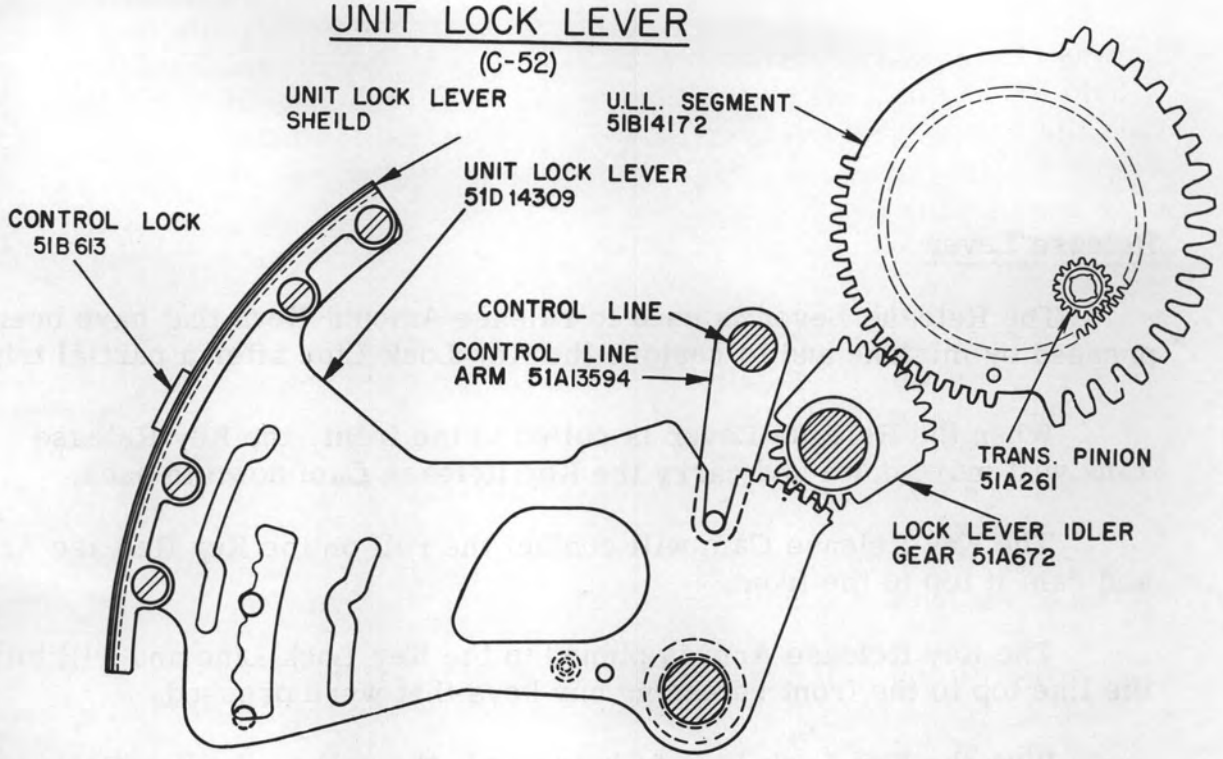
The raceway index for the Lock Register Position is not as deep as the other positions. When the Unit Lock Lever is moved to the lock register position, this shallow index will hold the Lock Line Control Arm top to the back preventing the Key Lock Line tripping.

With the Unit Lock Lever properly positioned, and the Key Lock Line tripped, the Clutch Release Operating Arm will move top to the back placing the high surface of the Arm in path of the Lock Line Control Arm.

The Lock Line Control Arm can not be moved top to the front and the Unit Lock Lever is locked in position until the Key Lock Line is restored.

UNIT LOCK LEVER

(C-52)



Release Lever

The Release Lever is used to release Amount Keys that have been pressed by mistake and to restore the Key Lock Line after a partial trip.

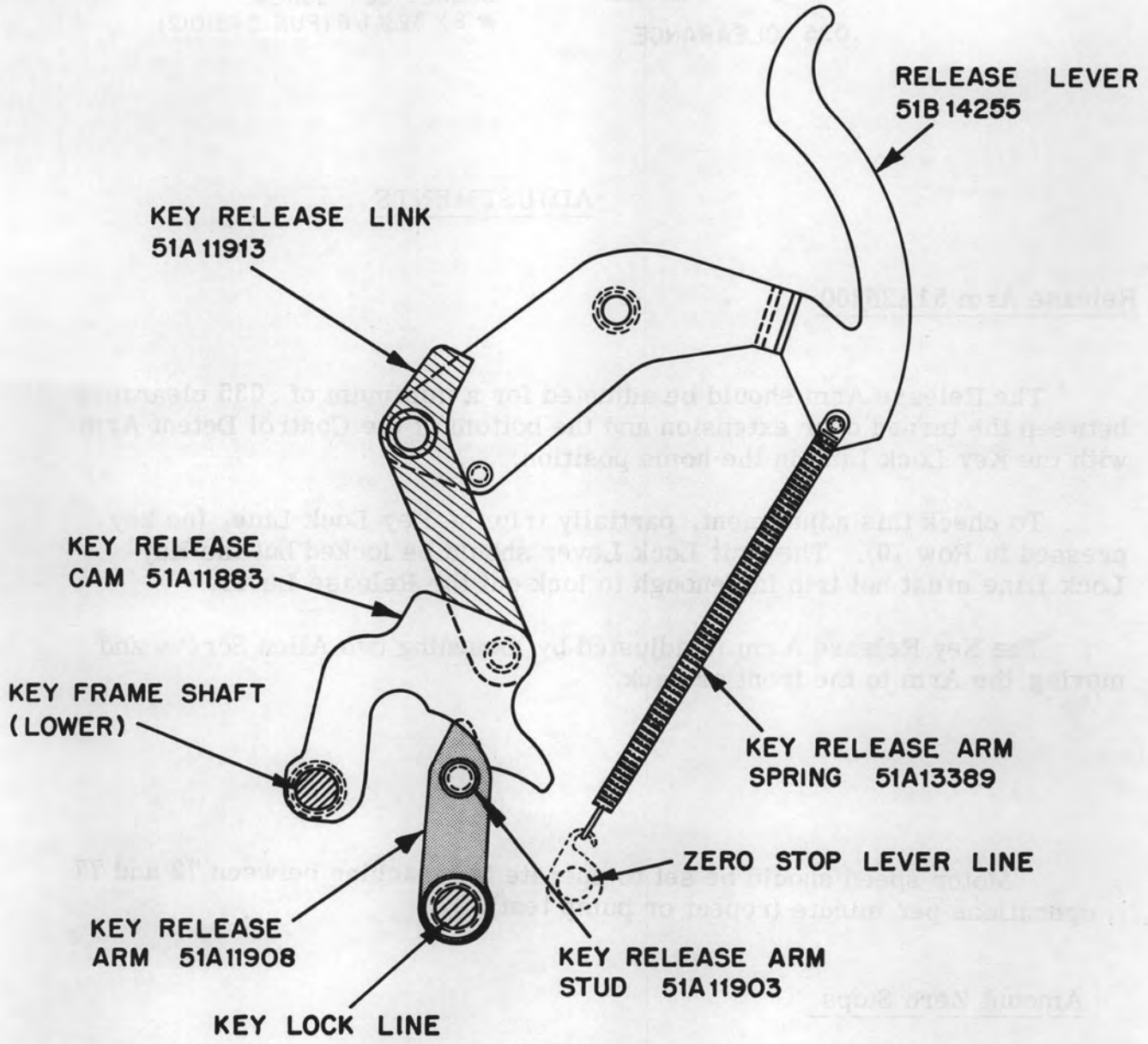
When the Release Lever is pulled to the front, the Key Release Link will move down and carry the Key Release Cam down in back.

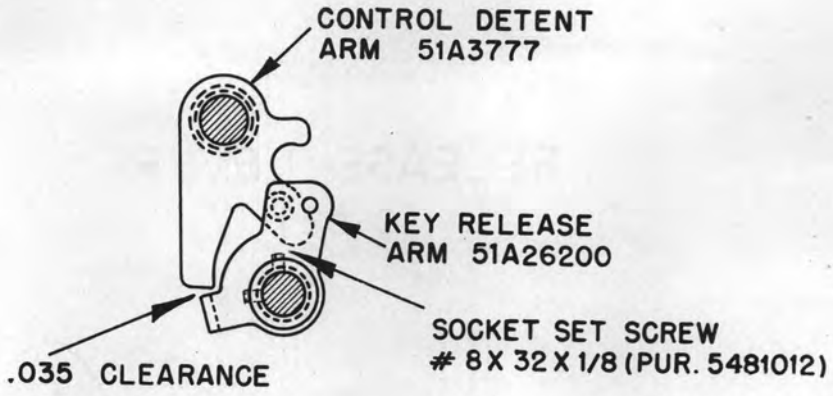
The Key Release Cam will contact the roll on the Key Release Arm and cam it top to the front.

The Key Release Arm is pinned to the Key Lock Line and will turn the line top to the front releasing any keys that were pressed.

With the Key Lock Line fully tripped, the roll on the Key Release Arm is behind the high surface of the Key Release cam preventing it being moved down in back.

RELEASE LEVER
(C-52)





ADJUSTMENTS

Release Arm 51A26200

The Release Arm should be adjusted for a minimum of .035 clearance between the turned over extension and the bottom of the Control Detent Arm with the Key Lock Line in the home position.

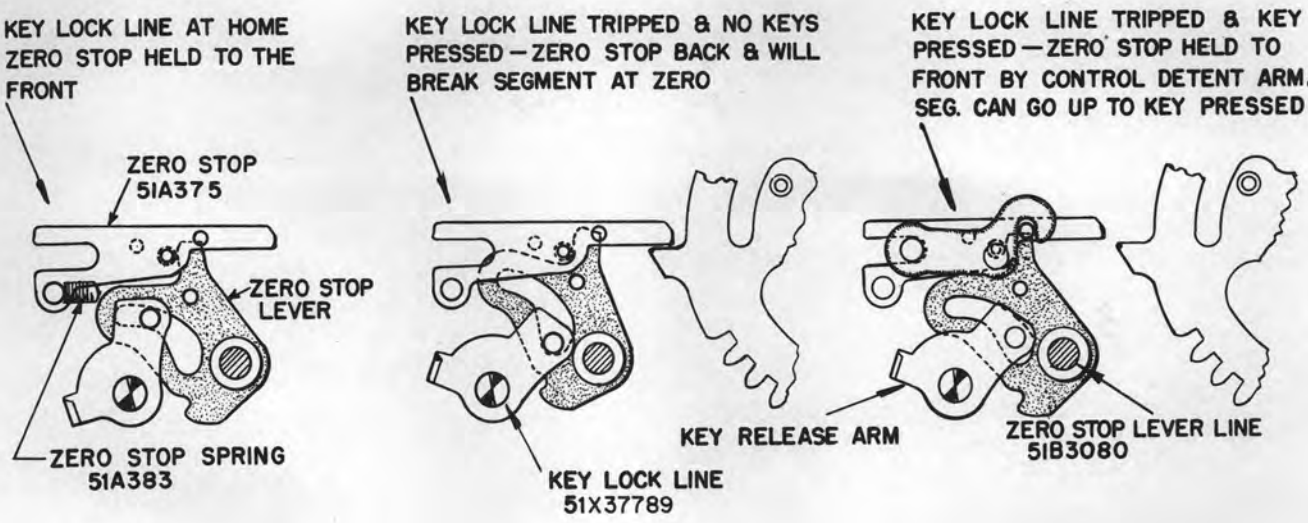
To check this adjustment, partially trip the Key Lock Line, (no key pressed in Row 10). The Unit Lock Lever should be locked but the Key Lock Line must not trip far enough to lock out the Release Lever.

The Key Release Arm is adjusted by loosening two Allen Screws and moving the Arm to the front or back.

Motor speed should be set to operate the machine between 72 and 77 operations per minute (repeat or pump test).

Amount Zero Stops

In the home position, the Zero Stop must be held in position for the Control Detent Arm to Hook over the stud in the Zero Stop without camming.


KEY LOCK LINE AT HOME ZERO STOP HELD TO THE FRONT
ZERO STOP 51A375
ZERO STOP LEVER
ZERO STOP SPRING 51A383
KEY LOCK LINE TRIPPED & NO KEYS PRESSED — ZERO STOP BACK & WILL BREAK SEGMENT AT ZERO
KEY LOCK LINE 51X37789
KEY LOCK LINE TRIPPED & KEY PRESSED — ZERO STOP HELD TO FRONT BY CONTROL DETENT ARM. SEG. CAN GO UP TO KEY PRESSED
KEY RELEASE ARM
ZERO STOP LEVER LINE 51B3080

If the arm has to cam over the stud in the Zero Stop, the Control Detent may fail to restore and hold the Zero Stop to the front on the next operation. If no Amount Key is pressed, the Differential Segment will go to the 9th position, giving wrong print and indication and adding 9 to the Counter Pinion for that Row.

To move the Zero Stops further to the front, the Key Release Arm can be adjusted top to the left. This will move the Zero Stop Lever and Zero Stop to the front.

Clutch Release Arm

There are three Clutch Release Arms provided for adjusting the home position of the cam line.

If the Clutch Release Arm is too long, the Cam Line will not come home far enough and the Switch Disengaging Arm 51A2427 will hold the Switch Operating Lever 51A2282 up in back causing the motor to run in the home position.

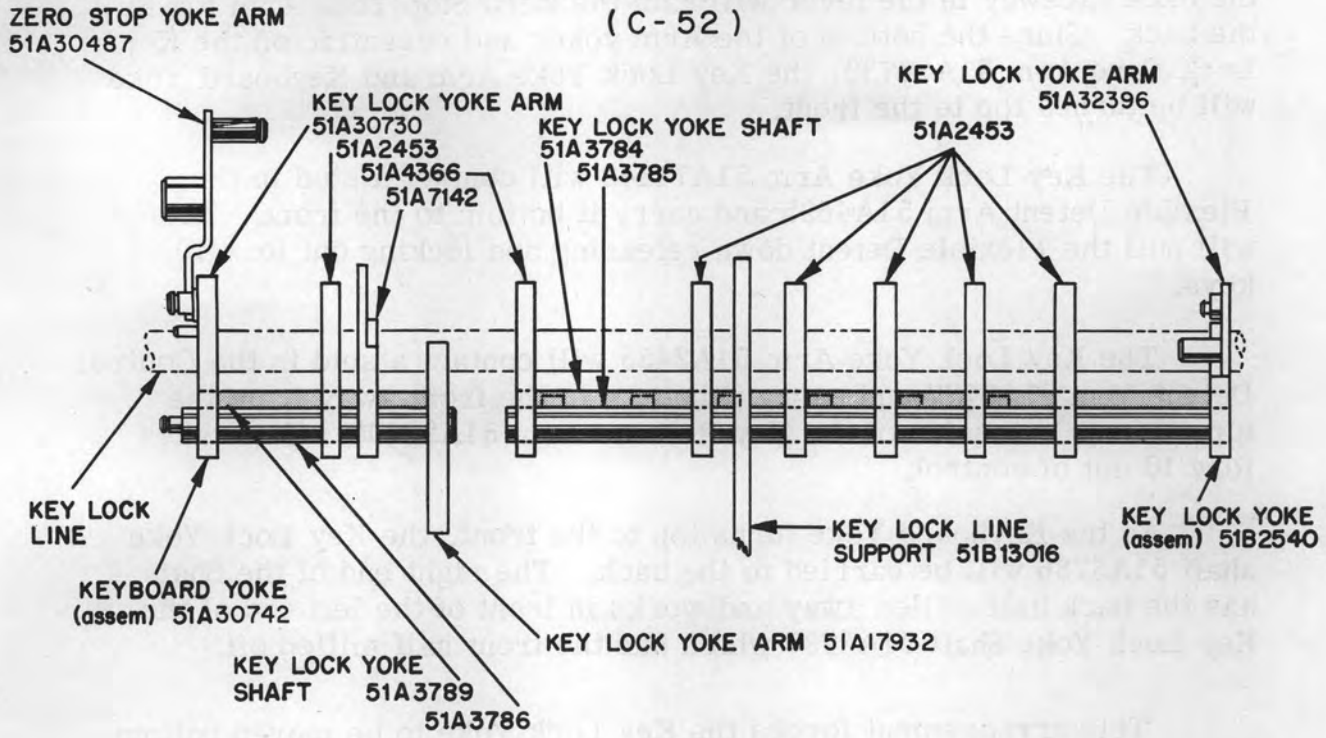
If the Clutch Release Arm is too short, the Cam Line will come home too far and the Counter Engaging Links will "nip" on the Engaging Cam Arm Studs.

The available Clutch Release Arms are listed below:

51A2258	Clutch Release Arm # 1 (short)
51X2829	Clutch Release Arm #2
51X28330	Clutch Release Arm # 3 (long)

SECTION "C"

KEYBOARD YOKE & KEY LOCK YOKE
(C - 52)



Keyboard Control

The Keyboard Yoke and Key Lock Yoke are swung on the Key Lock Line.

In the Register position, the Key Lock Yoke is held top to the back by a spring connected to the Key Lock Yoke Arm 51A32396.

The Keyboard Yoke is held top to the back by the Zero Stop Yoke Arm yoking an eccentric on the Key Lock Yoke Arm 51A30730.

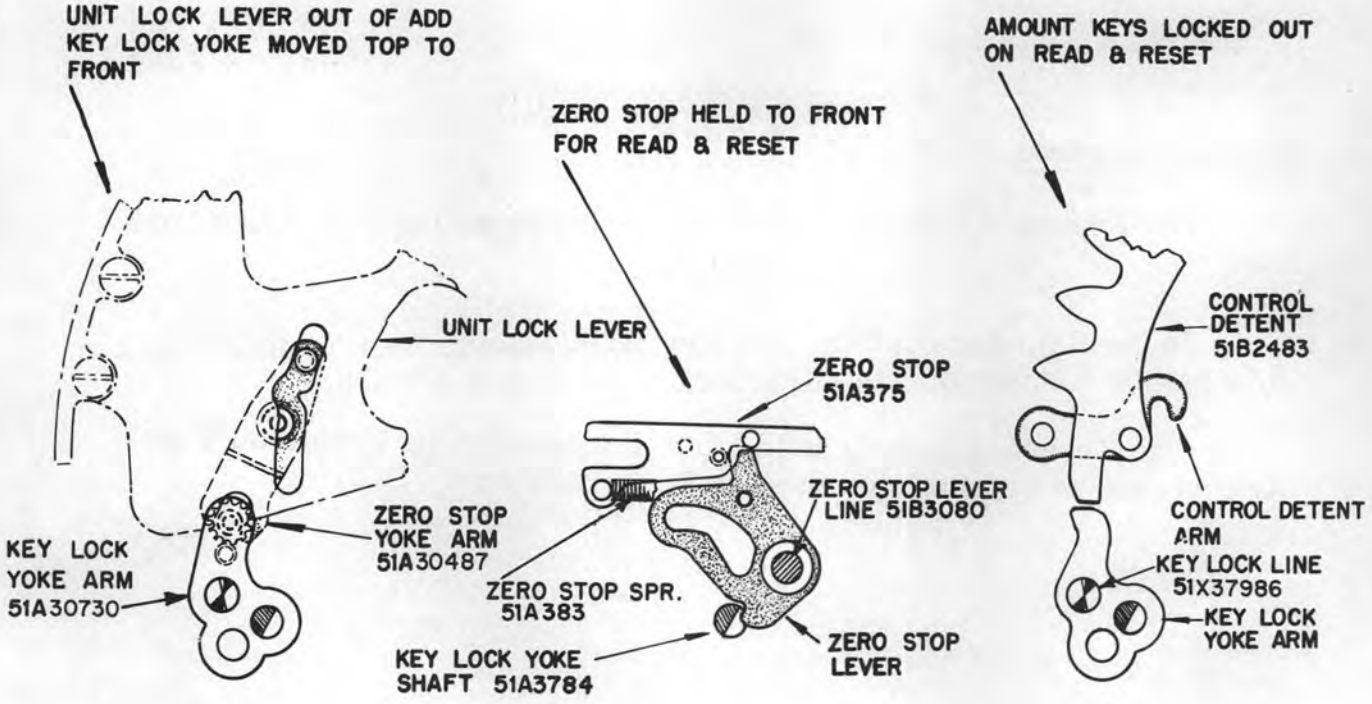
When the Unit Lock Lever is moved out of the register position, the back raceway in the lever will cam the Zero Stop Yoke Arm top to the back. Since the bottom of the Arm yokes and eccentric on the Key Lock Yoke Arm 51A30730, the Key Lock Yoke Arm and Keyboard Yoke will be turned top to the front.

The Key Lock Yoke Arm 51A71142 will contact a stud in the Flexible Detent Arm 51A4695 and carry it bottom to the front. This will pull the Flexible Detent down releasing and locking out Row 10 keys.

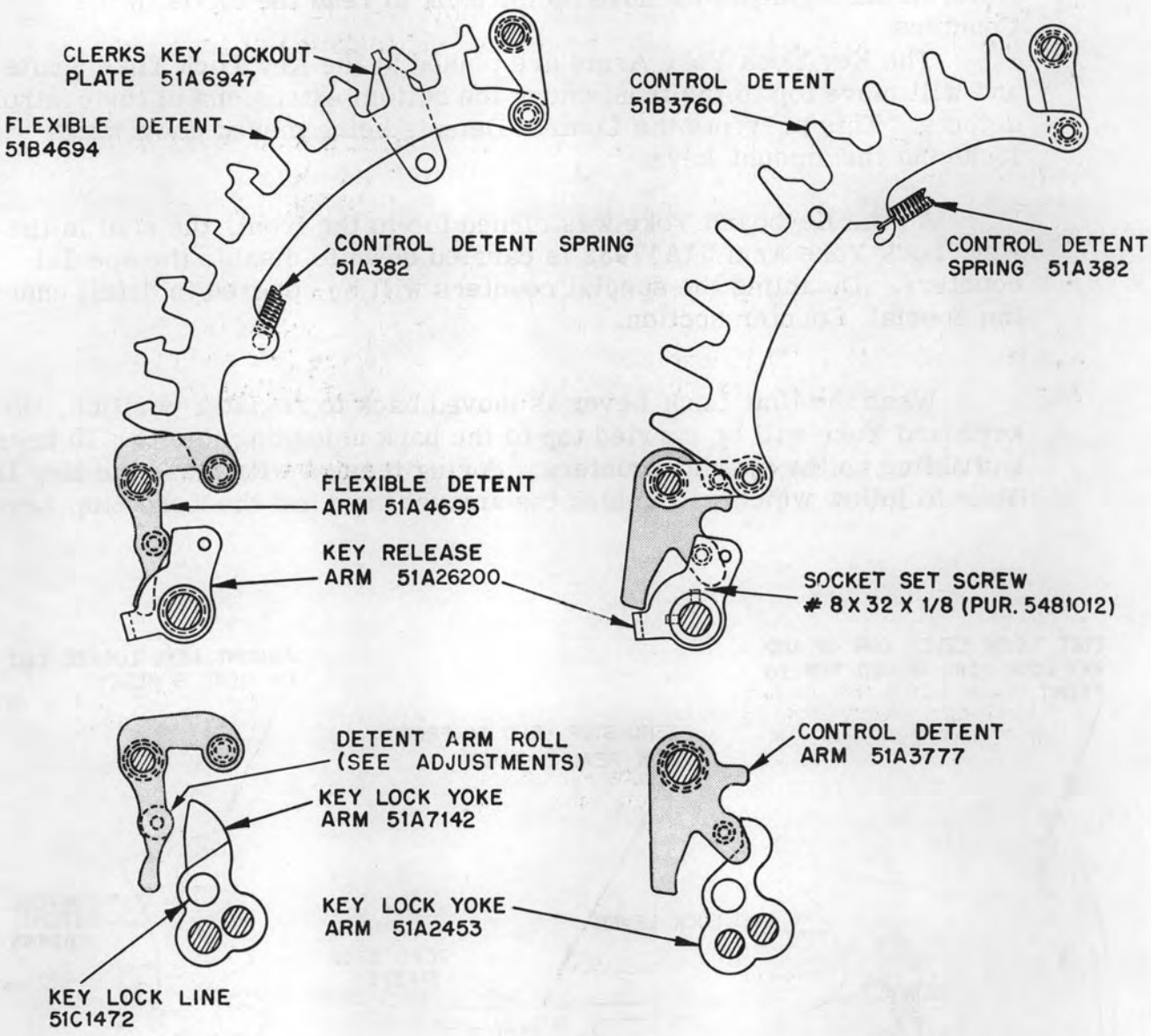
The Key Lock Yoke Arm 51A2453 will contact a stud in the Control Detent Arm 51A3777 and carry it bottom to the front away from the turned over extension of the Key Release Arm 51A26200. This takes Row 10 out of control.

As the Keyboard Yoke turns top to the front, the Key Lock Yoke shaft 51A3786 will be carried to the back. The right end of the Shaft has the back half milled away and works in front of the left end of the Key Lock Yoke Shaft 51A3785 which has the front half milled off.

This arrangement forces the Key Lock Yoke to be moved bottom to the back also.


UNIT LOCK LEVER OUT OF ADD KEY LOCK YOKE MOVED TOP TO FRONT
ZERO STOP HELD TO FRONT FOR READ & RESET
AMOUNT KEYS LOCKED OUT ON READ & RESET
UNIT LOCK LEVER
ZERO STOP 51A375
CONTROL DETENT 51B2483
ZERO STOP LEVER LINE 51B3080
ZERO STOP YOKE ARM 51A30487
KEY LOCK YOKE ARM 51A30730
ZERO STOP SPR. 51A383
CONTROL DETENT ARM
KEY LOCK LINE 51X37986
KEY LOCK YOKE ARM
KEY LOCK YOKE SHAFT 51A3784
ZERO STOP LEVER

ROW 10 DETENTS
(C-52)


CLERKS KEY LOCKOUT PLATE 51A6947
FLEXIBLE DETENT 51B4694
CONTROL DETENT SPRING 51A382
FLEXIBLE DETENT ARM 51A4695
KEY RELEASE ARM 51A26200
CONTROL DETENT 51B3760
CONTROL DETENT SPRING 51A382
SOCKET SET SCREW # 8 X 32 X 1/8 (PUR. 5481012)
DETENT ARM ROLL (SEE ADJUSTMENTS)
KEY LOCK YOKE ARM 51A7142
KEY LOCK YOKE ARM 51A2453
KEY LOCK LINE 51C1472
CONTROL DETENT ARM 51A3777

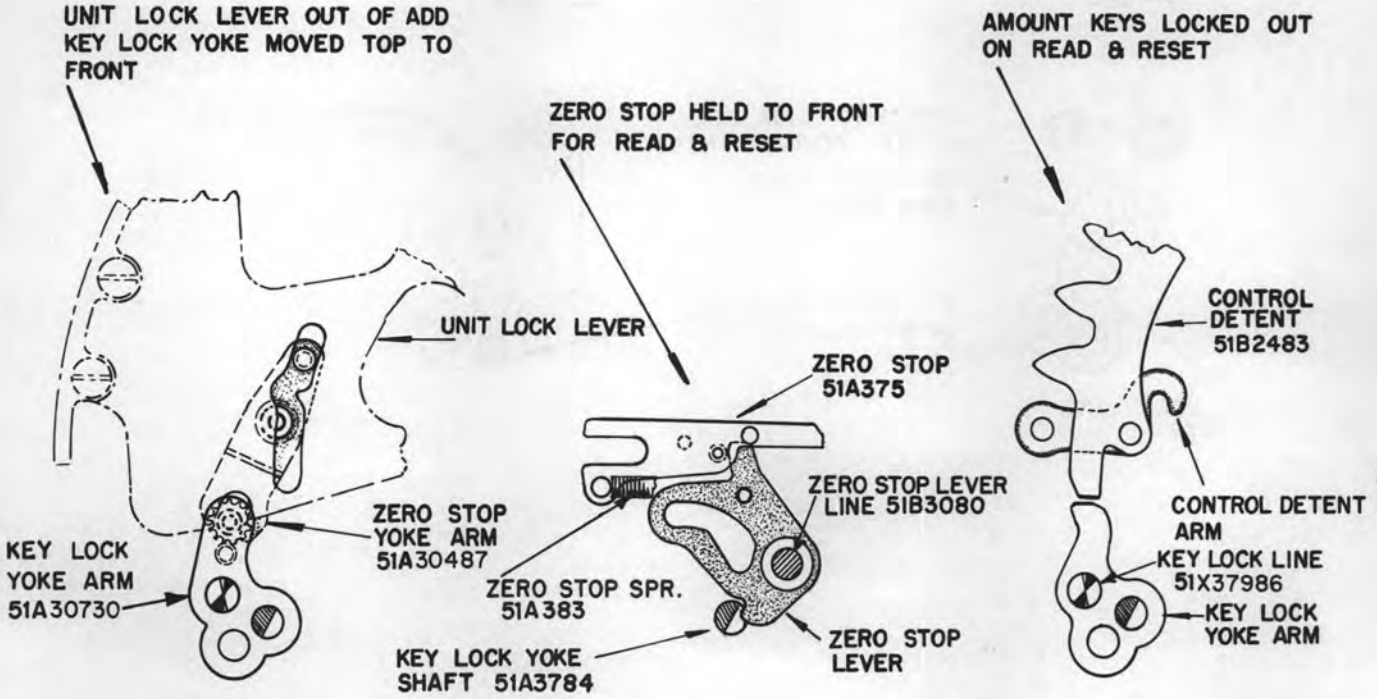
The mill cuts in the Key Lock Yoke shaft 51A3784, will move up in the path of the Zero Stop Levers preventing their moving top to the back when the Key Lock Line is tripped.

This in turn will hold the Zero Stops to the front and allow the Differential Segments to move up the bank to read the totals in the Counters.

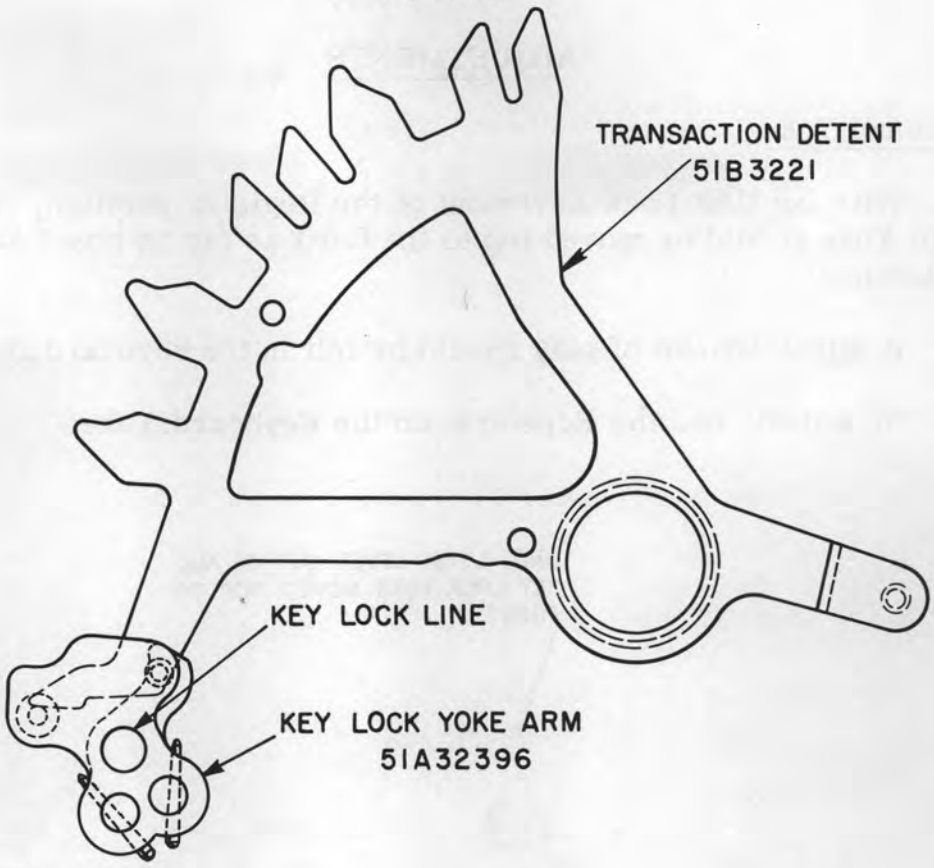
The Key Lock Yoke Arms are pinned to the Key Lock Yoke Shafts and will move top to the front under the bottom extensions of the control detents. This prevents the Control Detents being moved down which locks out the amount keys.

As the Keyboard Yoke was turned top to the front, the stud in the Key Lock Yoke Arm 51A17932 is carried down to disable the special counters. Disabling the special counters will be covered in detail under the Special Counter section.

When the Unit Lock Lever is moved back to register position, the keyboard Yoke will be carried top to the back unlocking the Row 10 keys and abling up the special counters. Spring tension will cause the Key Lock Yoke to follow which will unlock the amount keys and the Zero Stop Levers.


UNIT LOCK LEVER OUT OF ADD KEY LOCK YOKE MOVED TOP TO FRONT
ZERO STOP HELD TO FRONT FOR READ & RESET
AMOUNT KEYS LOCKED OUT ON READ & RESET
UNIT LOCK LEVER
ZERO STOP 51A375
CONTROL DETENT 51B2483
ZERO STOP LEVER LINE 51B3080
ZERO STOP YOKE ARM 51A30487
KEY LOCK YOKE ARM 51A30730
ZERO STOP SPR. 51A383
KEY LOCK YOKE SHAFT 51A3784
ZERO STOP LEVER
CONTROL DETENT ARM
KEY LOCK LINE 51X37986
KEY LOCK YOKE ARM

(C-52)



Keyboard Yoke Control - Row 1

With the Unit Lock Lever in Register position and either the Total, Taxable Total or Cash Balance Due Keys pressed, the Transaction Detent 51B32221 will be cammed down. The bottom of this Detent will contact the stud in the Key Lock Yoke Arm 51A32396 and turn it and the Key Lock Yoke top to the front to lock out the amount keys.

The Keyboard Yoke will remain top to the back, on these operations, leaving Row 10 in control of the Key Lock Line.

With an amount key pressed, the Total, Taxable Total or Change Balance Due Keys cannot be used.

As the amount key is pressed, the Control Detent is carried down placing the bottom of the Detent in front of the key Lock Yoke Arm.

This prevents the Key Lock Yoke being turned top to the front which locks out the Total, Taxable Total and Change Balance Due Keys.

This same condition prevents the Unit Lock Lever being moved out of Register with an amount key pressed.

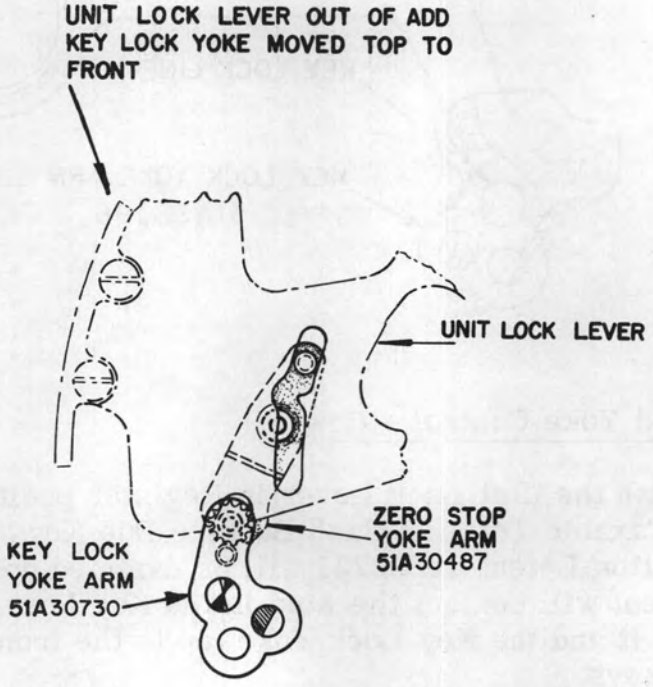
ADJUSTMENTS

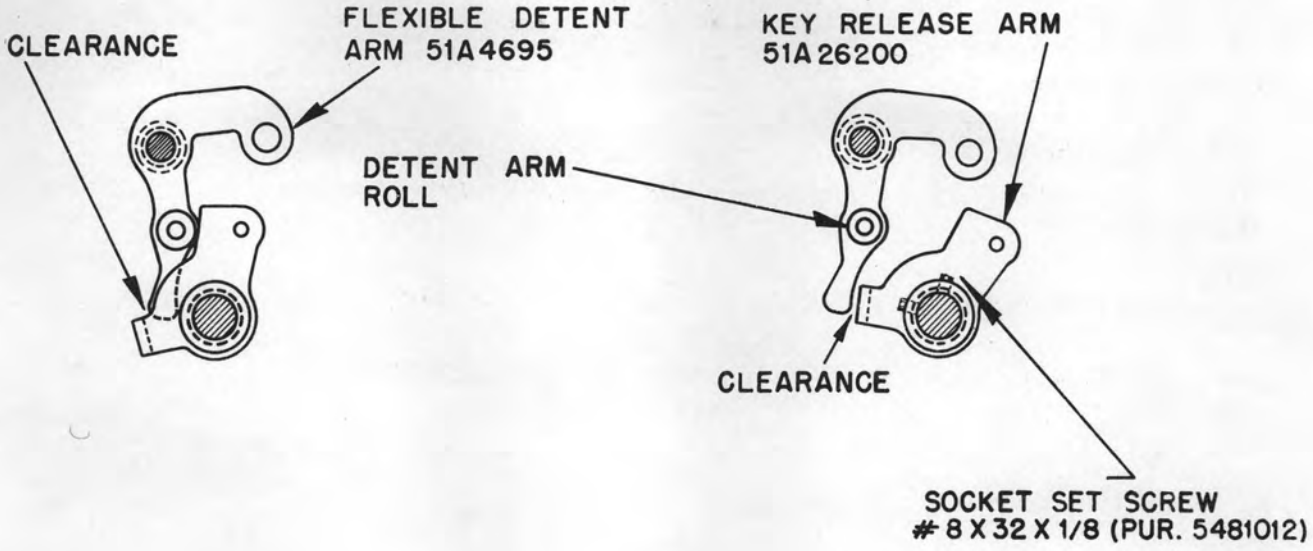
Keyboard Yoke

With the Unit Lock Lever out of the Register position, the Keyboard Yoke should be moved top to the front as far as possible without "bottoming."

A slight amount of play should be felt in the keyboard at this time.

To adjust, use the Eccentric on the Keyboard Yoke.





Flexible Detent Arm

With the Unit Lock Lever out of Register, the Row 10 Flexible Detent Arm should be held out of the path of the turned over part of the Key Release Arm.

Also, the Flexible Detent Arm should be free (not bottom) in this position.

With the Unit Lock Lever back in Register, the Detent Arm must be allowed to move back behind the formed part of the Key Release Arm.

To adjust, use one of the rolls listed below, on the Flexible Detent Arm.

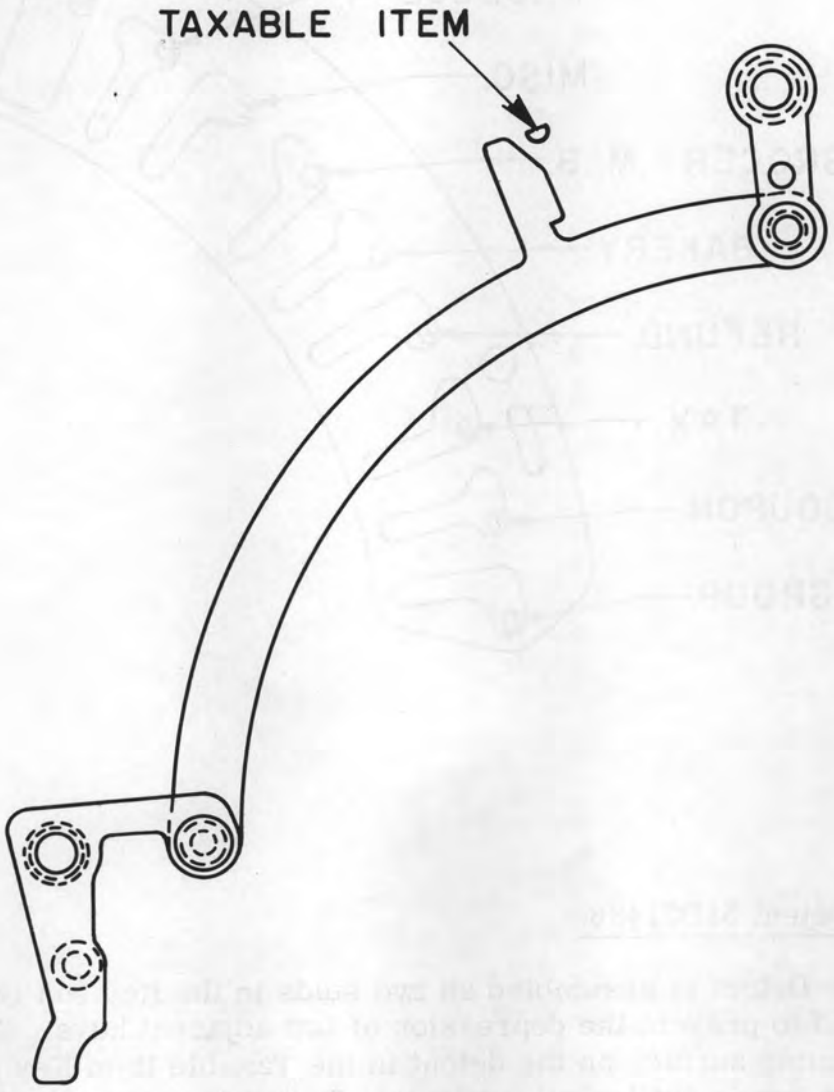
51A28225	Detent Arm Roll	.235
51A28226	Detent Arm Roll	.250
51A28227	Detent Arm Roll	.265

SECTION "D"

CONTROL DETENTS

Transaction Key Bank

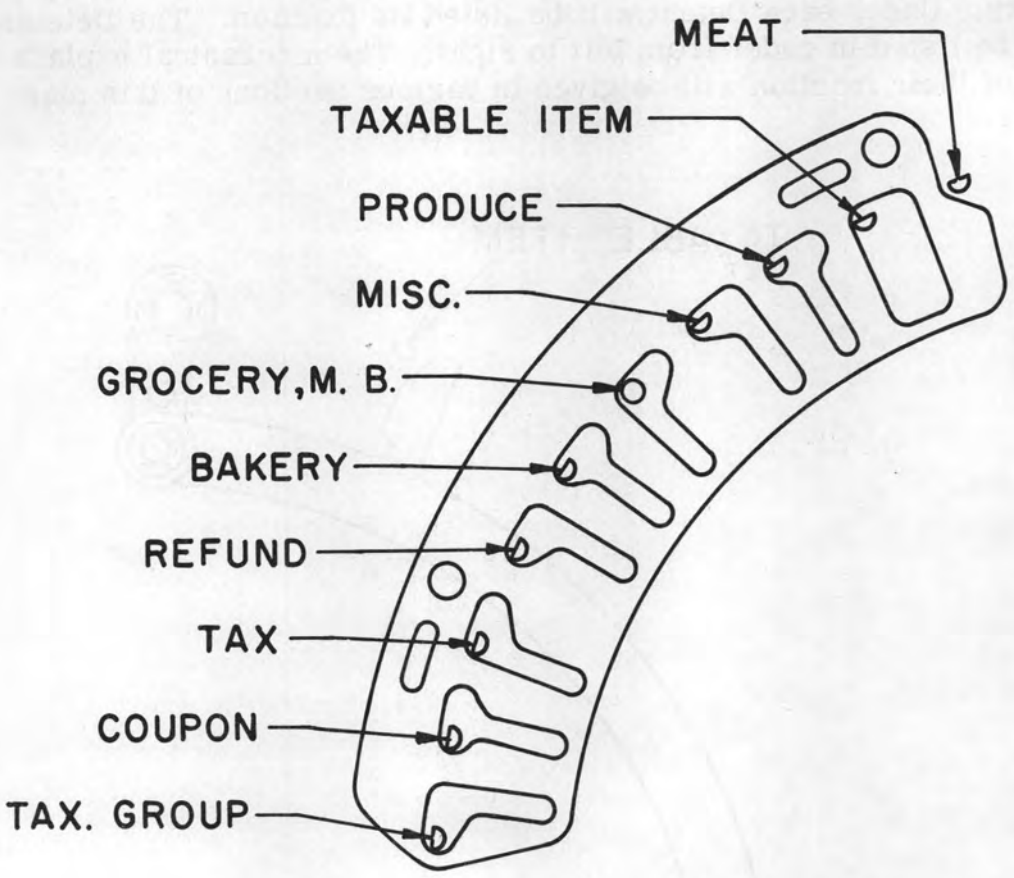
Below is listed the Control Detents in the Transaction Key Banks. Under each Detent will be listed its function. The Detents will be listed in order from left to right. The mechanical explanation of their function will be given in various sections of this manual.



Flexible Detent 51B13651

The Detent retains the Taxable Item Key in Row 2 after it has been depressed. Through the Flexible Detent Arm it prevents the machine from releasing with the Taxable Item Key partially depressed and prevents the key from being depressed after the machine is released.

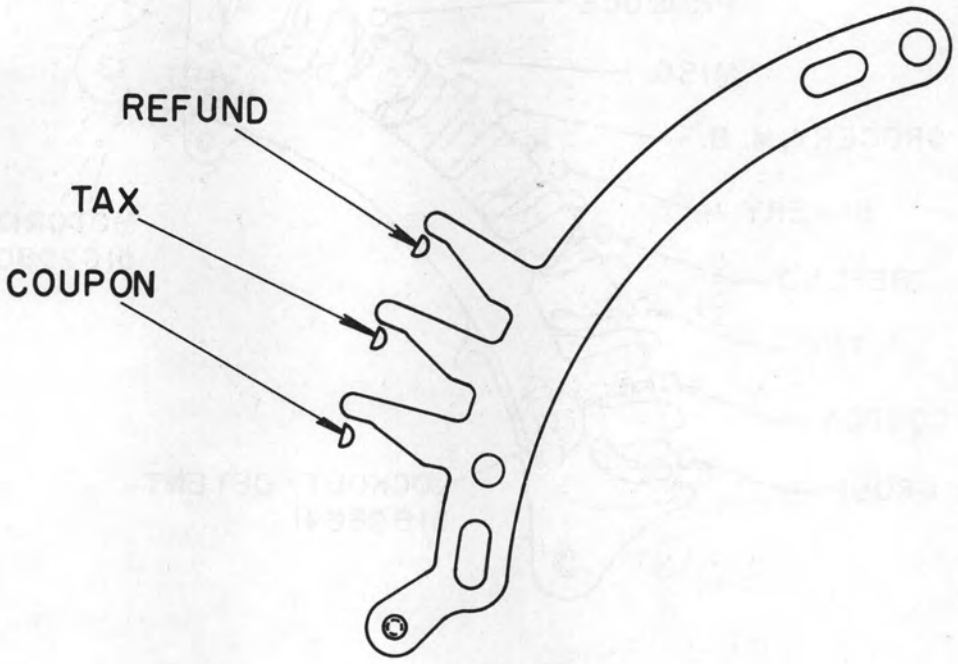
LOCKOUT DETENT 51D31436



Lockout Detent 51D31436

This Detent is assembled on two studs in the Key Pin Guide and is used to prevent the depression of two adjacent keys. There is no camming surface on the detent in the Taxable Item Key position. This key is not locked out by this Detent to enable another key in Row 2 to be depressed with it.

PRINTER CONTROL DETENT
51A13515

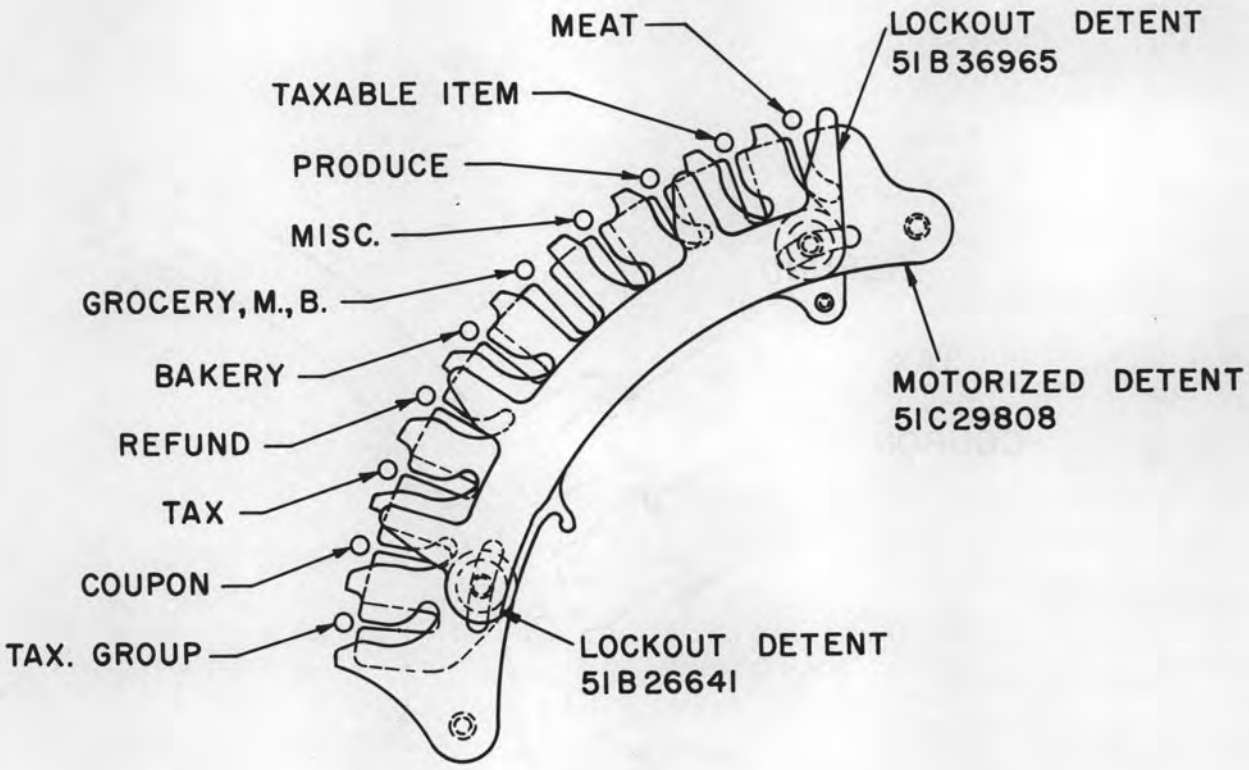


Printer Control Detent 51A13515

This detent rides on two studs to the left of the Row 2 Key Pin Guide and is used to permit certain keys in Row 2 to print on the detail. On this machine the Coupon, Refund and Tax Keys will actuate this Detent.

MOTORIZED DETENT ASSEMBLY (C-52)

51C29808



Lockout Detent 51B36965

This Lockout Detent is mounted free on the left side of the Row 2 Motorized Detent and is assembled to the Lockout Detent 51B26641. Locks out all keys in Row 2 whenever the Amount Tendered, Total, Taxable Total or Change-Balance Due Keys in Row 1 is depressed. Also, whenever a key in Row 2 is depressed, through the Lockout Detent 51B26641, prevents the Amount Tendered, Tax Total, Total, or Change-Balance Due Key from being depressed.

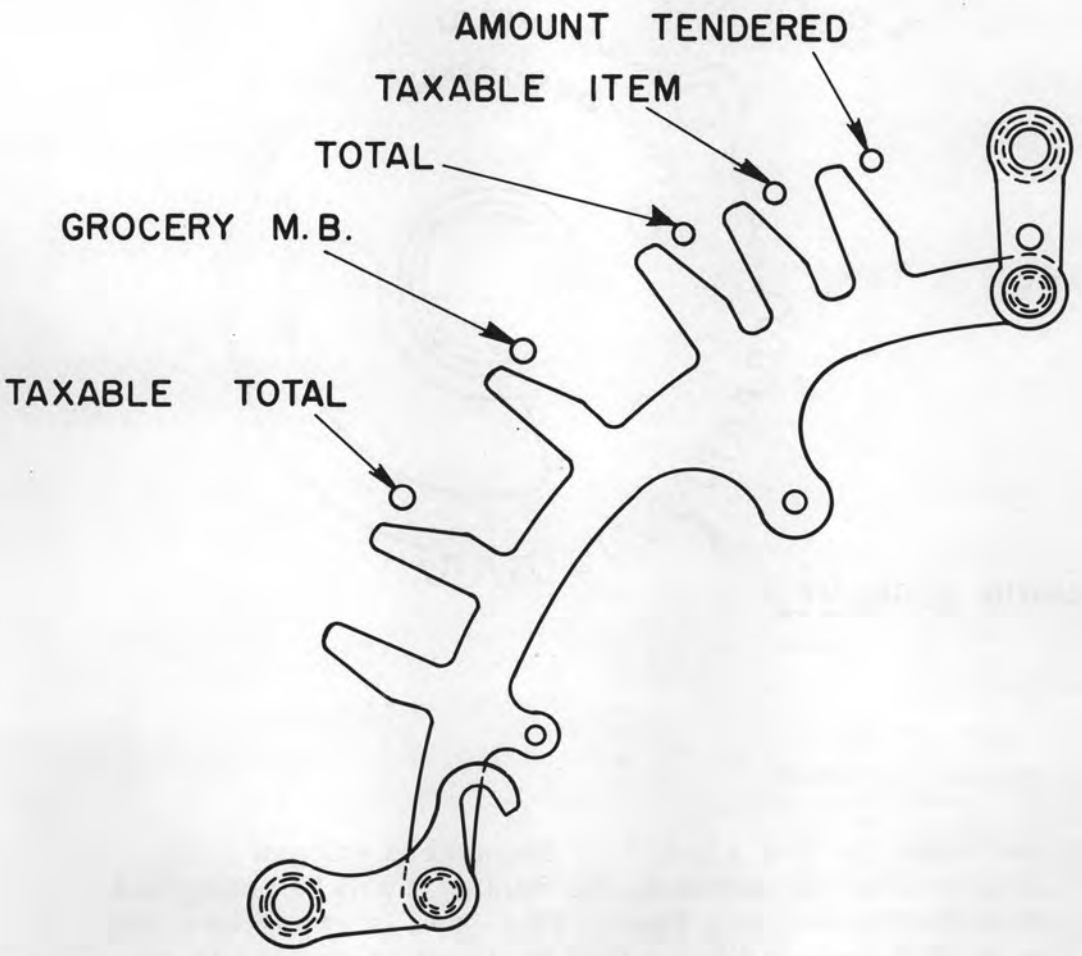
Motorized Detent 51C29808 (Row 2)

This Detent is used by all keys in Row 2 except the Taxable Item Key to release the machine. It also locks the key down that has been depressed and locks the remaining keys out after the machine has released. The Taxable Item Key position is cut out preventing the key from releasing the machine.

Lockout Detent 51B26641

This Detent is mounted free on the right side of the Row 2 Motorized Detent and is assembled to the Lockout Detent 51B36955. Locks out Amount Tendered, Total, Taxable Total and Change-Balance Due whenever any key in Row 2 is depressed. Through the Lockout Detent 51B36955 locks out all keys in Row 2 whenever any of the above Row 1 are depressed.

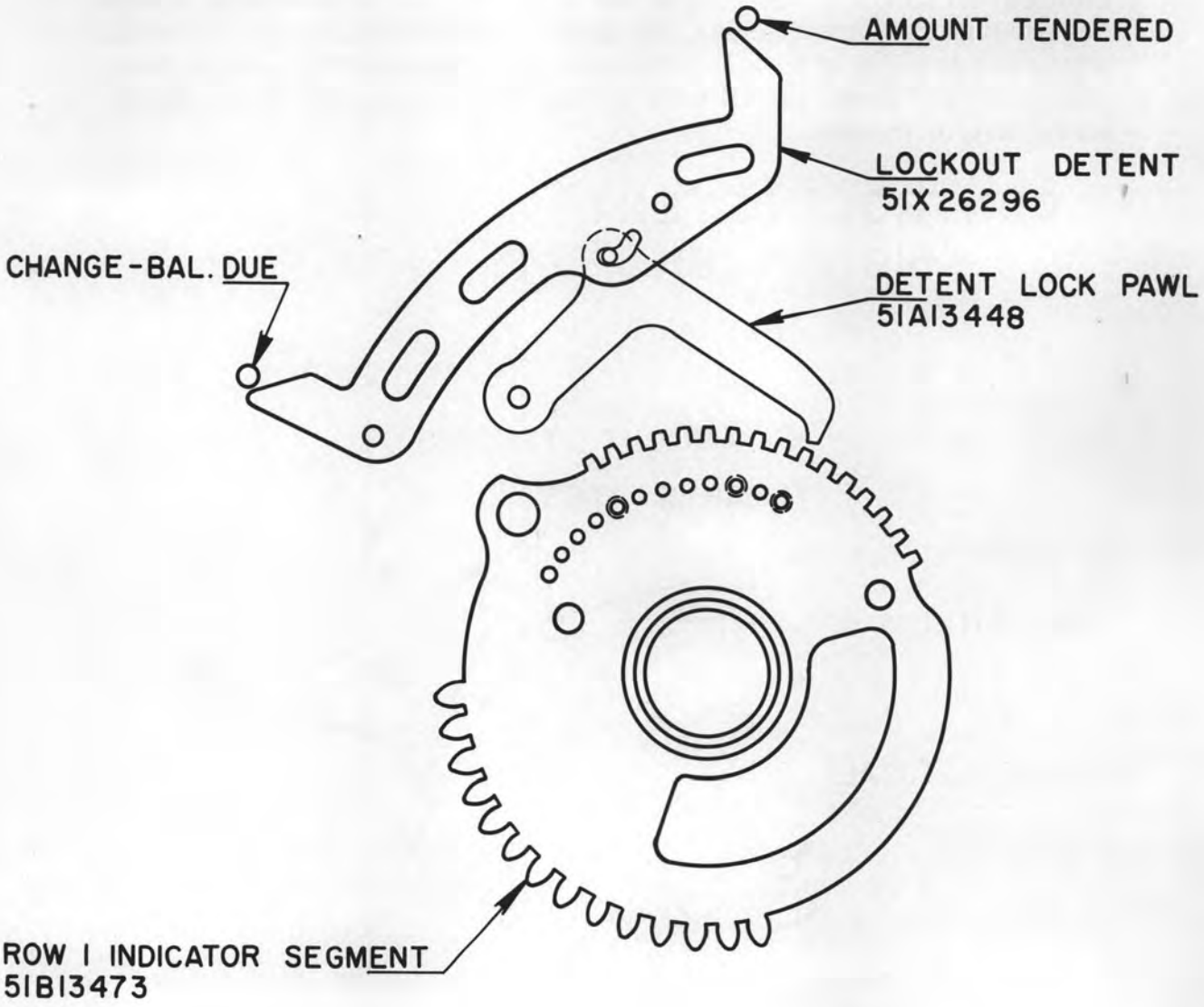
CONTROL DETENT
51B30429



Control Detent 51B30429

The Control Detent 51B30429 is operated by the Taxable Item Key in Row 2, the Amount Tendered, Total, Grocery Motor Bar, and Taxable Total Key in Row 1. It holds the Zero Stop for Row 1 out of the path of the Differential Segment whenever one of these keys is used. This Detent also prevents the Change-Balance Due Key from being depressed whenever one of the above mentioned keys is used.

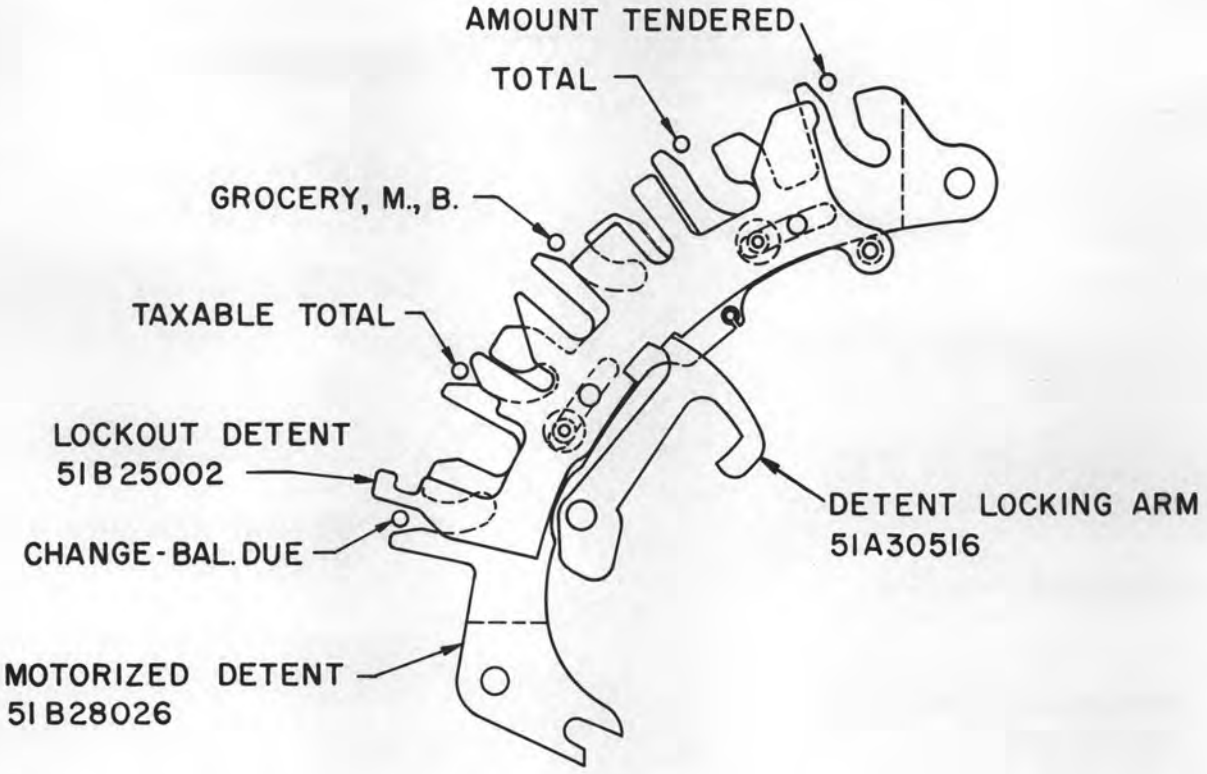
LOCKOUT DETENT
(C-52)



Lockout Detent 51C19093

In the event the Row 1 Indicator Segment is stopped in the fourth, ninth or eleventh position, the Stud in it will be positioned in the path of the Detent Lock Pawl. This Pawl is swung on a Stud in the Key Bank Frame and has a Stud in it that is working in a Camming Raceway of the Lockout Detent 51C19093. The Lockout Detent has two camming surfaces on it under the key pins for the Amount Tendered and the Change-Balance Due Keys. When one of these keys is pressed, the Lockout Detent will be cammed down and move the Detent Lock Pawl down in the back. If the Row 1 Indicator Segment is positioned to the fourth, ninth or eleventh position the Stud in it will stop the Detent Lock Pawl and prevent either key from being depressed fully.

MOTORIZED DETENT 51B28026



Motorized Detent 51B28026 (Row 1)

This Detent is used by all Keys in Row 1 to release the machine. It also locks down the keys that have been depressed and locks out the remaining keys after the machine has been released.

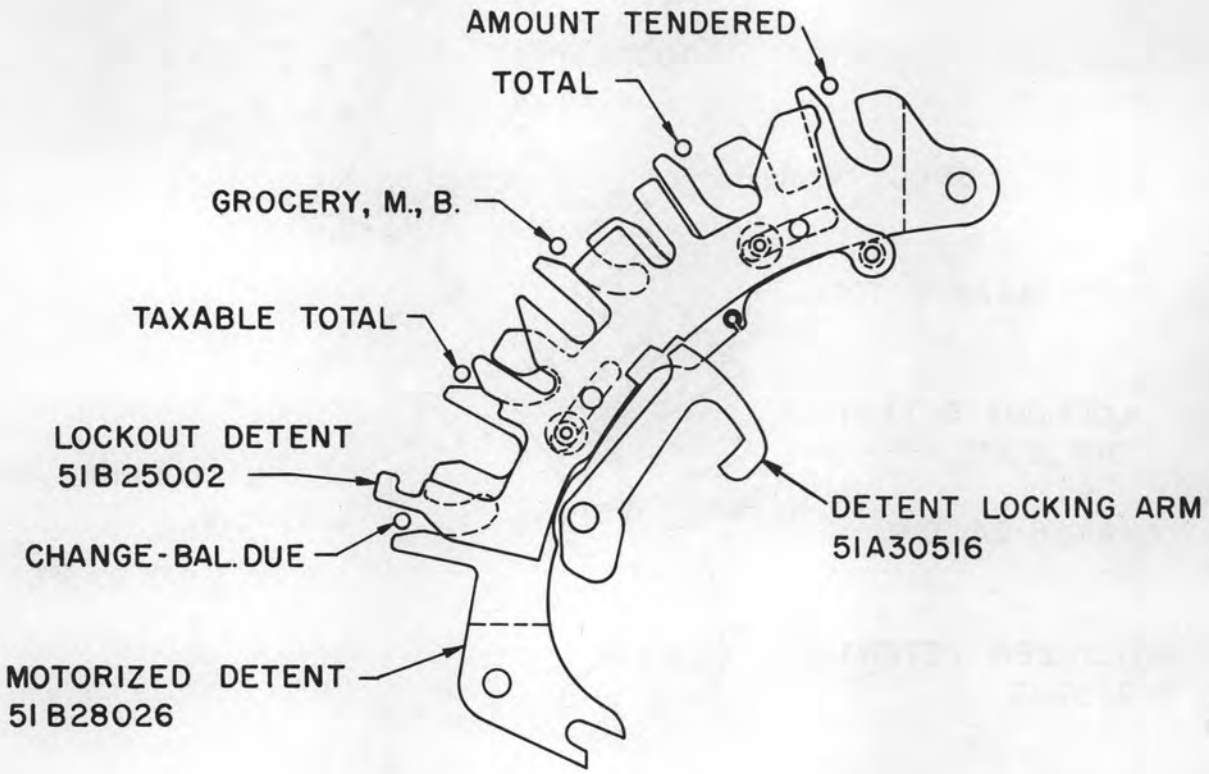
Lockout Detent 51B25002

Following a Change-Balance Due Operation this Detent locks out the Taxable Total and Amount Tendered Keys. It is retained in this position by the Detent Locking Arm being in the back step of the notch in the Lockout Detent.

Whenever the first Tax Item Operation is made, the Detent is cammed up the Bank and the Detent Locking Arm will snap into the front step of the notch in the Detent. This unlocks the Taxable Total Key and locks out the Tax Key in Row 2 and the Total and Amount Tendered Keys in Row 1.

As the Taxable Total operation is made, the Detent Locking Arm will be moved out of the front step of the Detent and the Detent will be held up the bank by the Taxable Total Key. At the end of the operation the Detent Locking Arm will have been moved into the back step of the notch and will hold the Detent up the bank to lockout the Amount Tendered and Taxable Total Keys. This will unlock the Total and Tax Keys.

MOTORIZED DETENT 51B28026



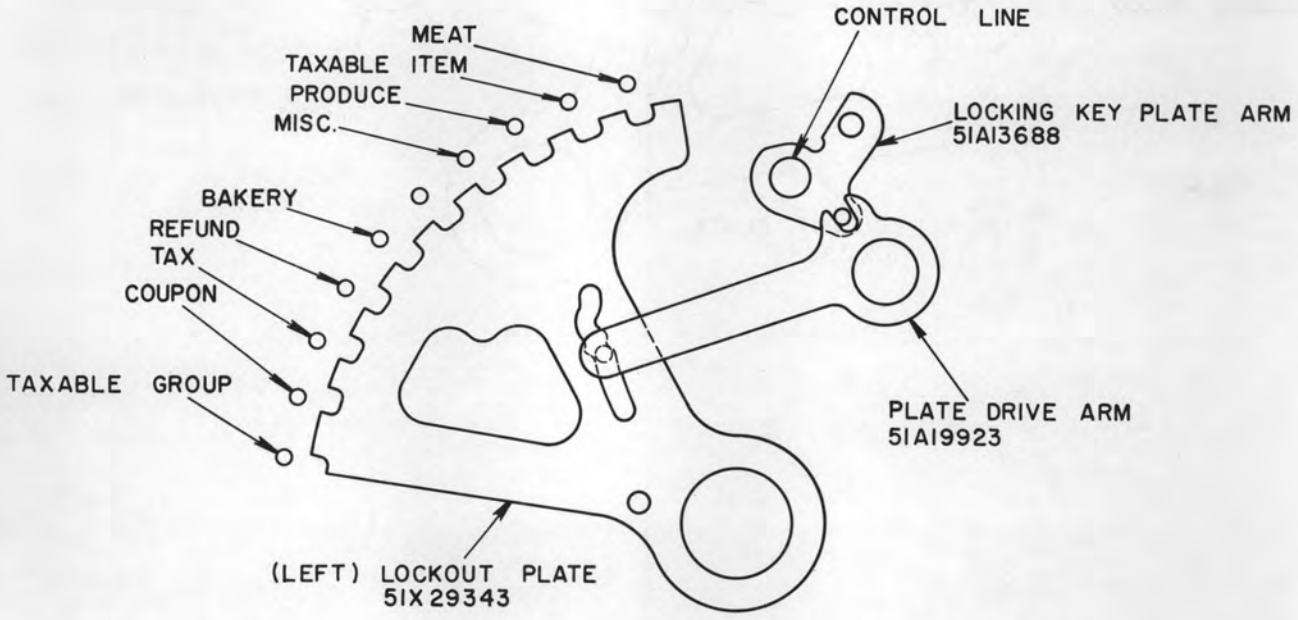
When the machine is operated on the Total Operation, the Detent Locking Arm will be moved out of the back step of the notch and the Lockout Detent will move down the bank. This unlocks the Amount Tendered Key and locks out the Tax Total Key and Grocery Motor Bar.

Whenever the Detent was moved up by the Taxable Item Key, the Taxable Total flash is moved up by the lower extension of the Detent. In this position of the flash the red portion will be in the opening of the Key Bank Cover.

When the Detent is allowed to move down following the Taxable Total Operation the flash is allowed to move down and the red portion is moved below the opening of the Key Bank Cover.

DIFFERENTIAL DETENTS

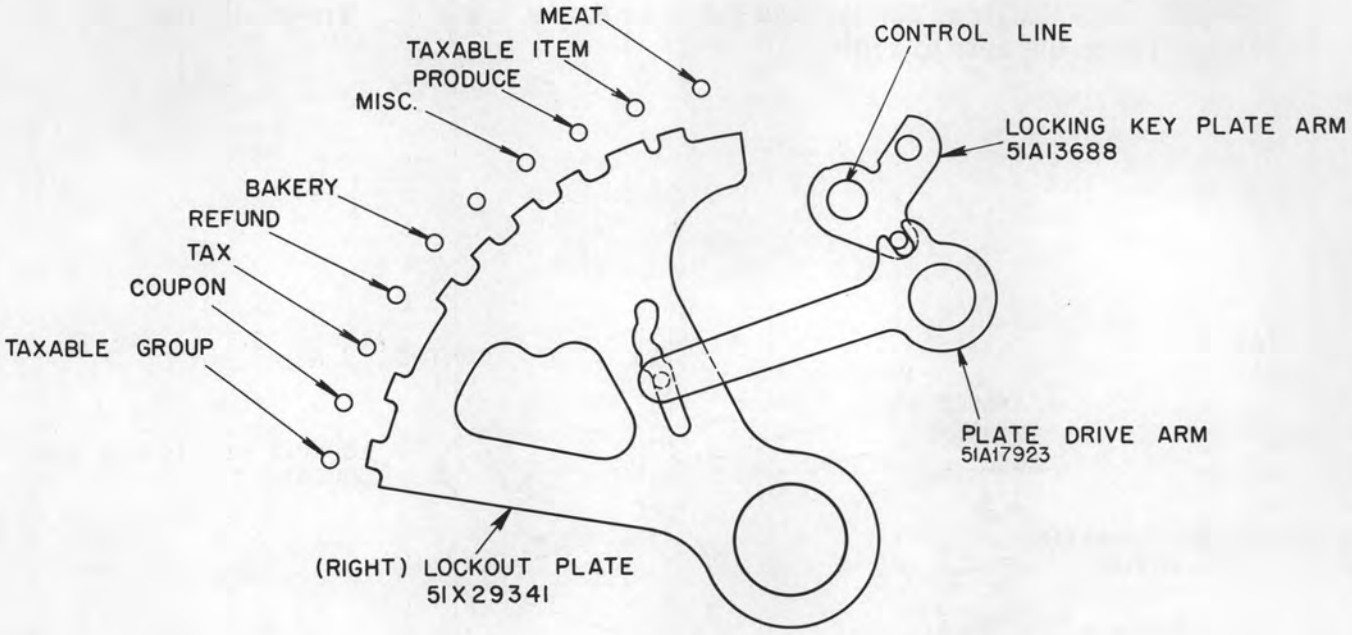
The Differential Detents are swung on the Differential Shaft and works with the Transaction Keys in Rows 1 and 2. They will be listed from the left to right.



Lockout Plate 51D29893 (51X29343)

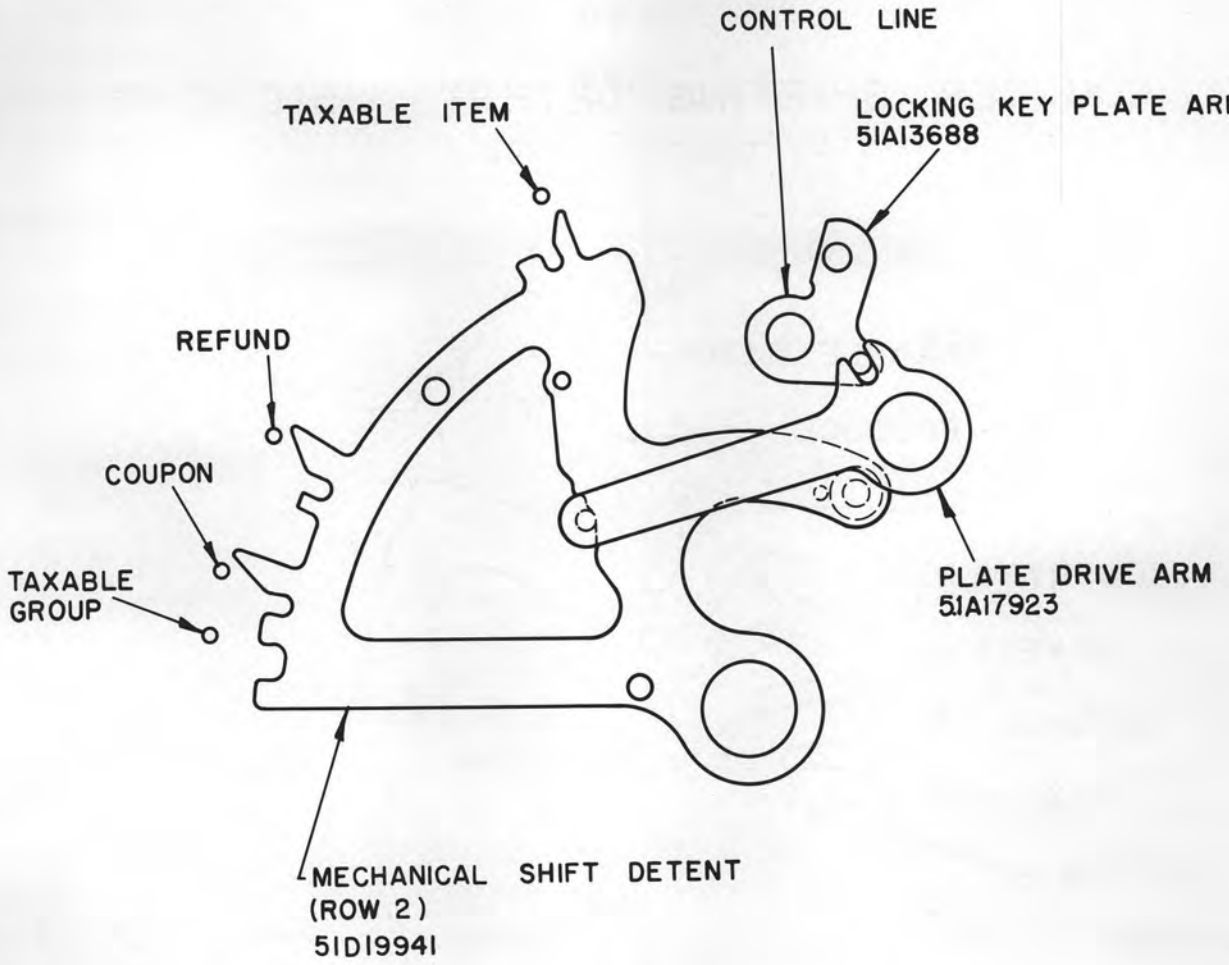
Works with all Keys in Row 2 and Grocery Motor Bar in Row 1. Locks out all Keys in Row 2 whenever the Unit Lock Lever is in "Read Group" or "Lock Register" position.

ROW 2 LOCKOUT PLATES
C-52



Lockout Plate 51D29893 (51X29341)

Works with all Keys in Row 2 and the Grocery Motor Bar in Row 1. Locks out Taxable Item Key whenever the Unit Lock Lever is in the "Read Row 2 Tax Group and Grocery Motor Bar" Position. Locks out Grocery Motor Bar in Row 1 and Meat, Produce, Taxable Item, Miscellaneous, Bakery and Tax Key in Row 2 when the Unit Lock Lever is in the "Reset Row 2 - and Taxable Group" position. Locks out Tax Item Key when the Unit Lock Lever is in the "Reset Row 2 + Grocery Motor Bar" position.



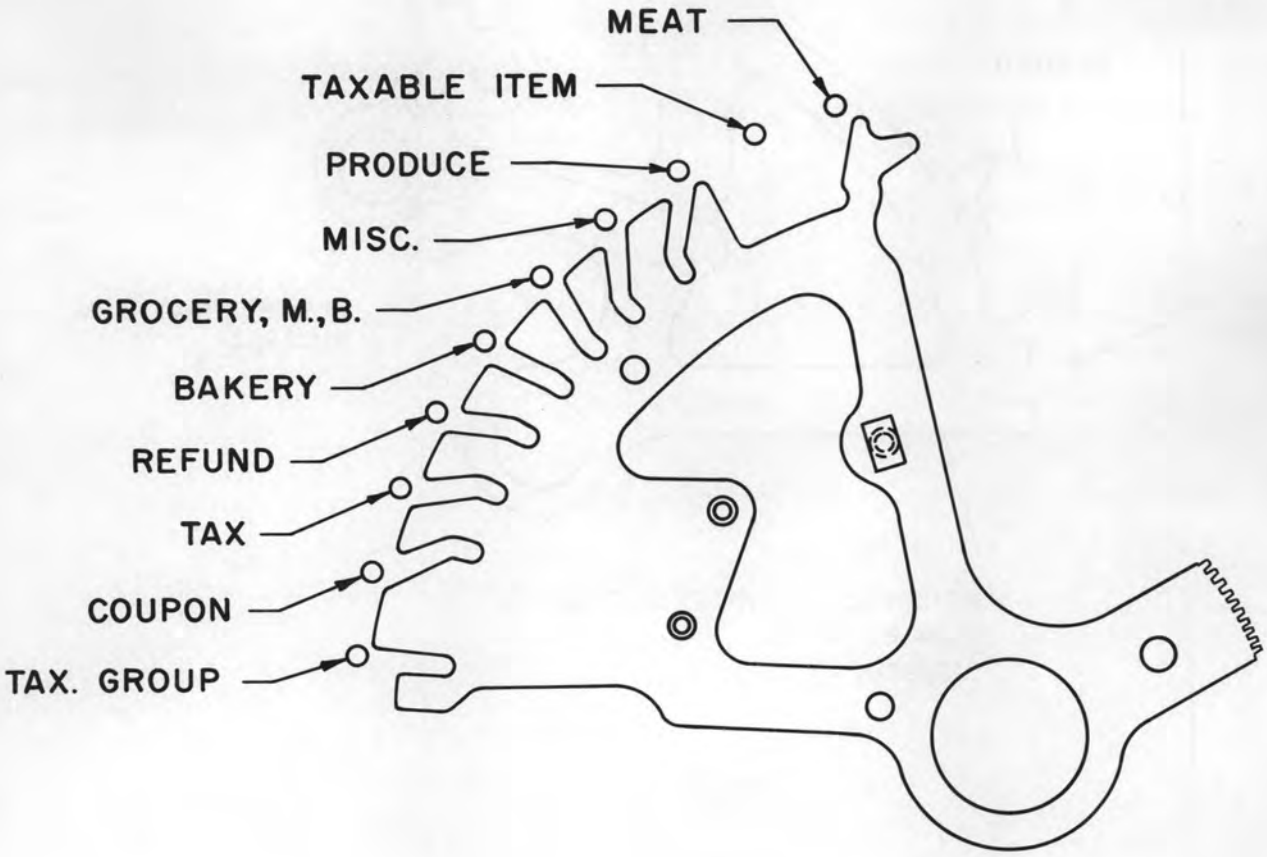
Mechanical Shift Detent 51D19441

The Taxable Item, Refund and Coupon Keys in Row 2 work with the camming portions of this Detent. The Taxable Item Key will give the least amount of movement to the Detent to set up the Counter Shifting Pitman so that the lower Counter will receive no shift.

The Coupon and Refund Keys will cause the Detent to move the Shifting Pitman to the back so the lower Counter will receive a two position shift.

When the Tax Item Key is retained down and either the Coupon or Refund Key is depressed, the extension in front of the Tax Item key pin will contact it and prevent the Coupon and Refund key from being fully depressed.

COUNTER SHIFTING DETENT 51C19282



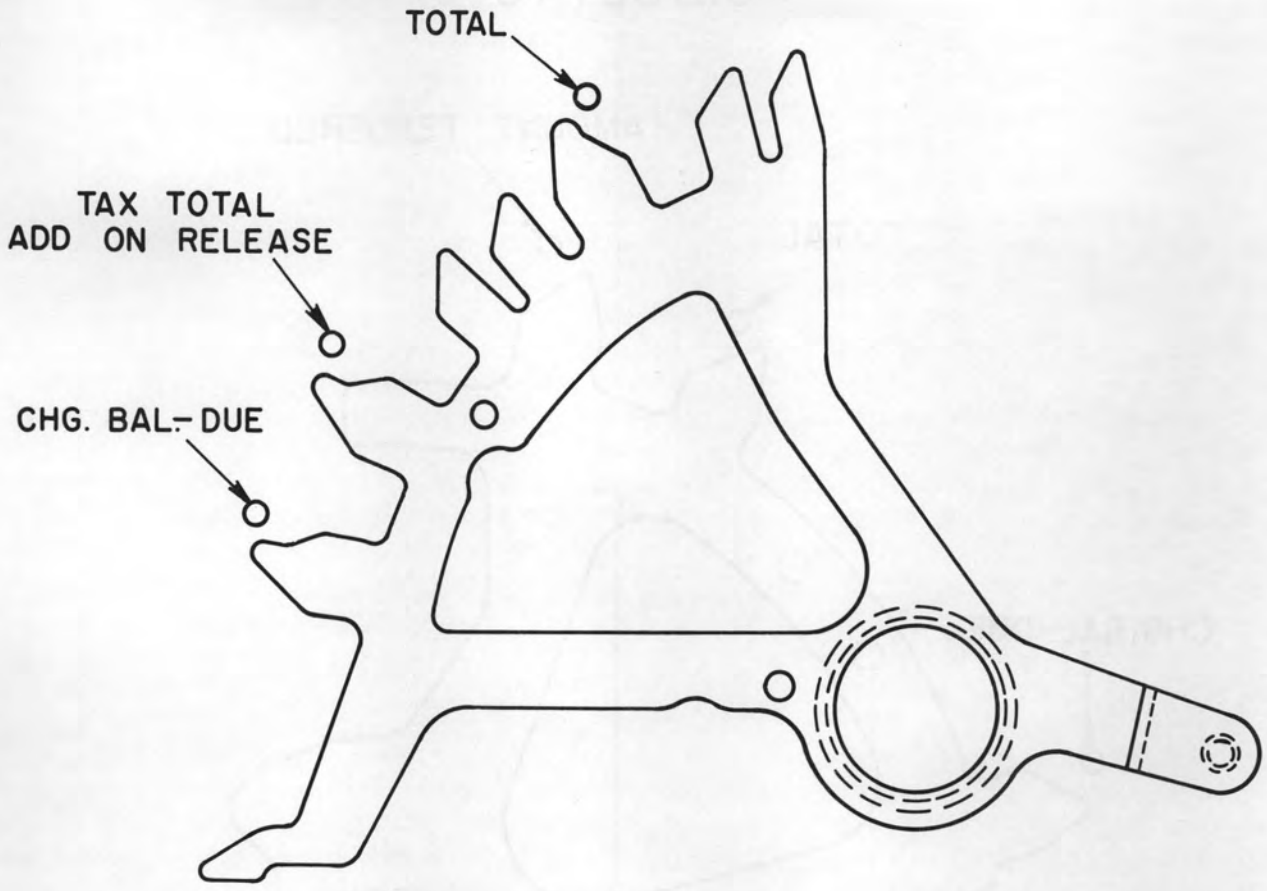
Counter Shifting Detent 51C19282

This Detent works with all keys in Row 2 except the Taxable Item Key. Also works with the Grocery Motor Bar and is used to shift the Upper Counter to the position corresponding to the key depressed.

The Detent is cut out in the Taxable Item Position to prevent getting any shift of the Upper Counter from this Key.

The top extension of the Detent is used to prevent possibility of forcing the Meat Key down whenever one of the lower five keys is used.

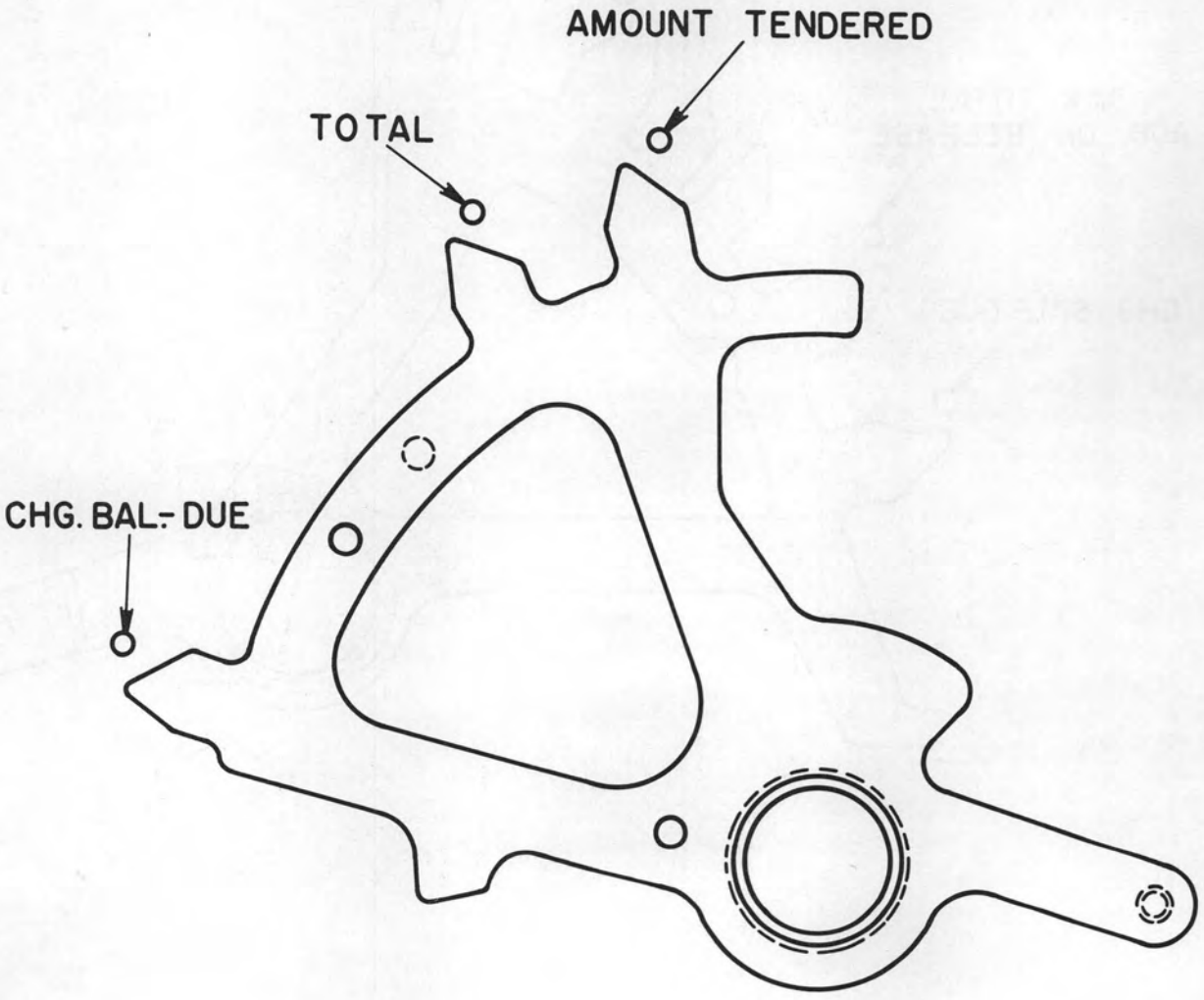
TRANSACTION DETENT
51B32221



Transaction Detent 51B32221

Works with the Total, Taxable Total and Change-Balance Due keys in Row 1 to Lockout the Amount Keys, holds out the zero Stops on the Amount Bank and raises the Lower Counter Engaging Links to the read position.

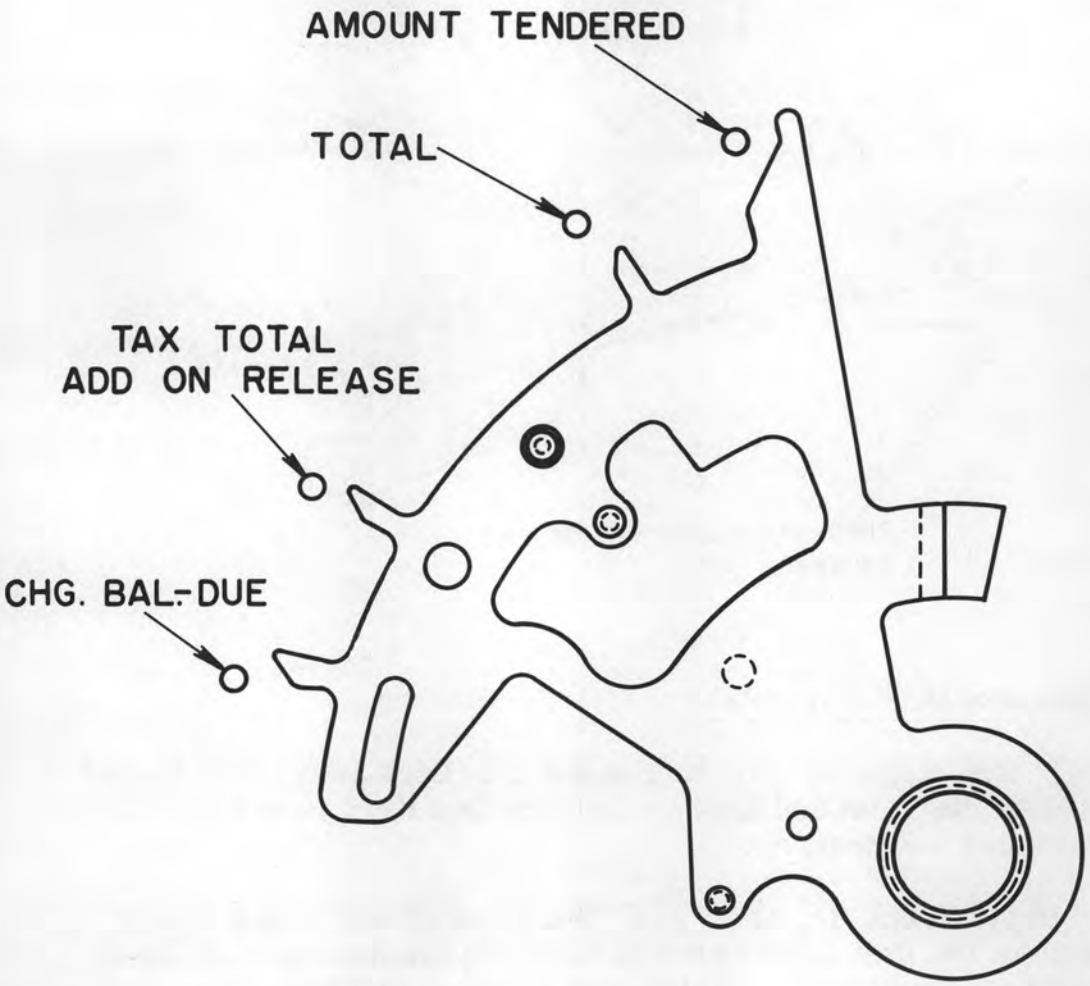
TRANSACTION DETENT
51B32740



Transaction Detent 51B32740

Works with the Amount Tendered, Total and Change-Balance Due Keys in Row 1 to raise the Upper Counter Engaging to the disabled position.

TRANSACTION DETENT
51B19948

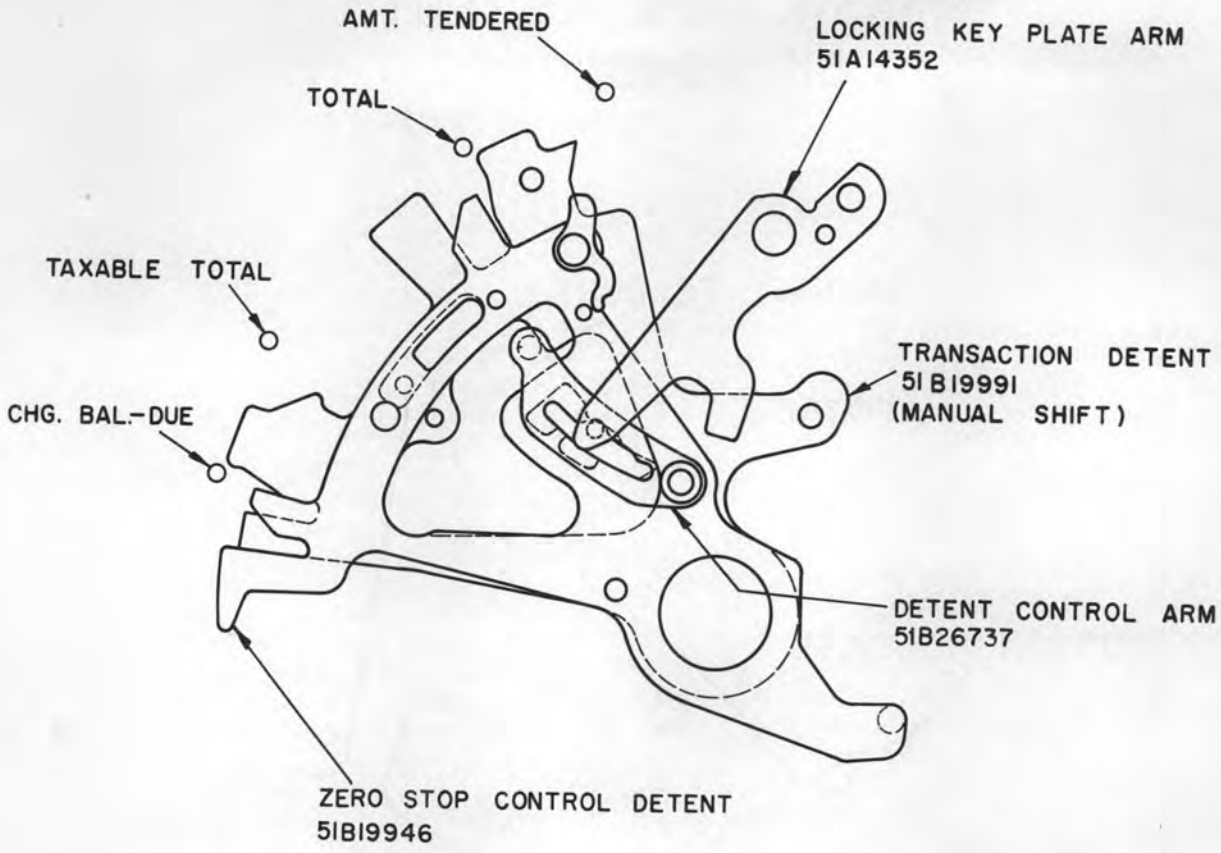


Transaction Detent 51B19948

This Detent is used with the Amount Tendered, Total, Taxable Total and Change-Balance Due Keys in Row 1.

The Amount Tendered key will move the Detent to the back moving the Counter Shifting Pitman to the back to shift the Lower Counter two positions to the minus pinions.

Total, Taxable Total and Change-Balance Due Keys will move the Detent to the back to move the hooked portion of the Detent Lock Pawl over the Detent Locking Arm to unlock the Lockout Detent 51B 25002. Locks out the Taxable Item Key in the "Read Group" and "Reset Row 2 +" position of the Unit Lock Lever.



Transaction Detent 51B19991

In the "Register" position of the Unit Lock Lever this Detent is used by the Total and Change-Balance Due Keys to shift the Lower Counter one position.

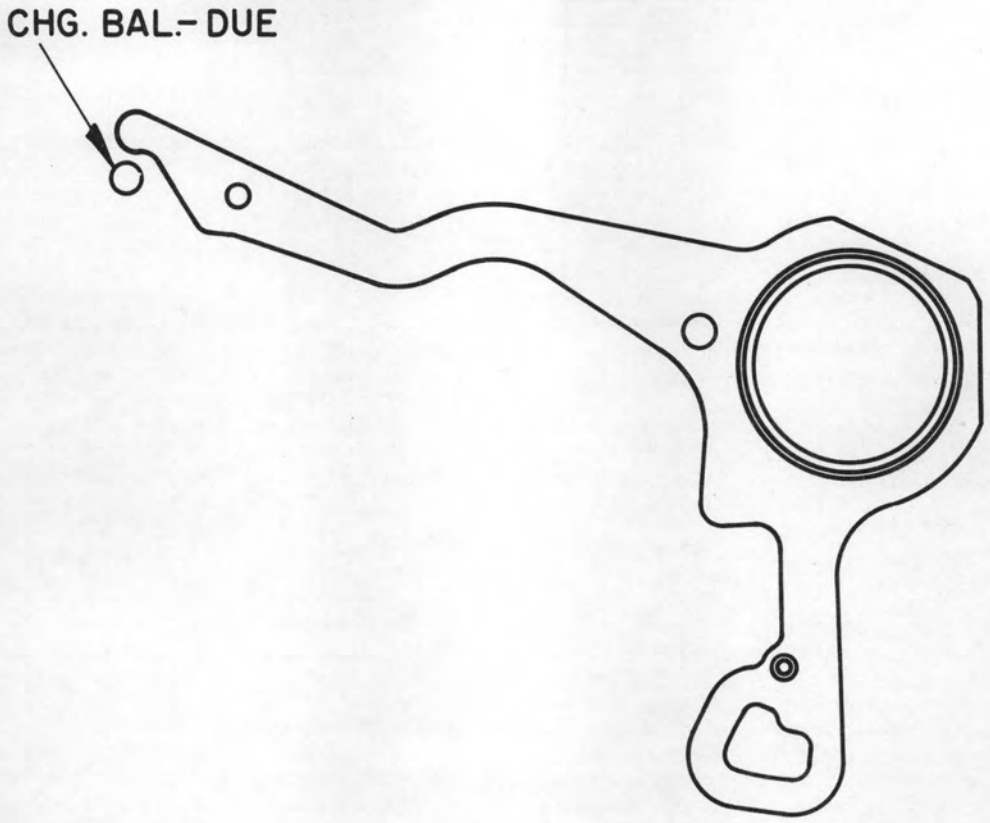
In the "Lock Register" and "Read Row 2" or "Reset Row 2" position of the Unit Lock Lever it locks out the Amount Tendered and Taxable Total keys. In the "Read Group" or "Reset Row 2 +" position it locks out the Amount Tendered, Taxable Total and Change Balance Due keys. Also locks out the Change-Balance Due key in the "Reset Row 2 -" position.

Zero Stop Control Detent 51B19946

Holds out the Row 2 Zero Stop on every operation except a Change Total when the minus pinions are read or reset and shifts the Main Itemizer through the transaction Detent 51B19991 to the minus position on these operations. Locks out the Amount Tendered key whenever the Crossfooter has been tripped on the minus side.

Locks out the Change Balance Due Key and Total Key in the "Lock Register" and "Reset Row 2 -" position of the Unit Lock Lever.

COUNTER CONTROL DETENT
51C19327



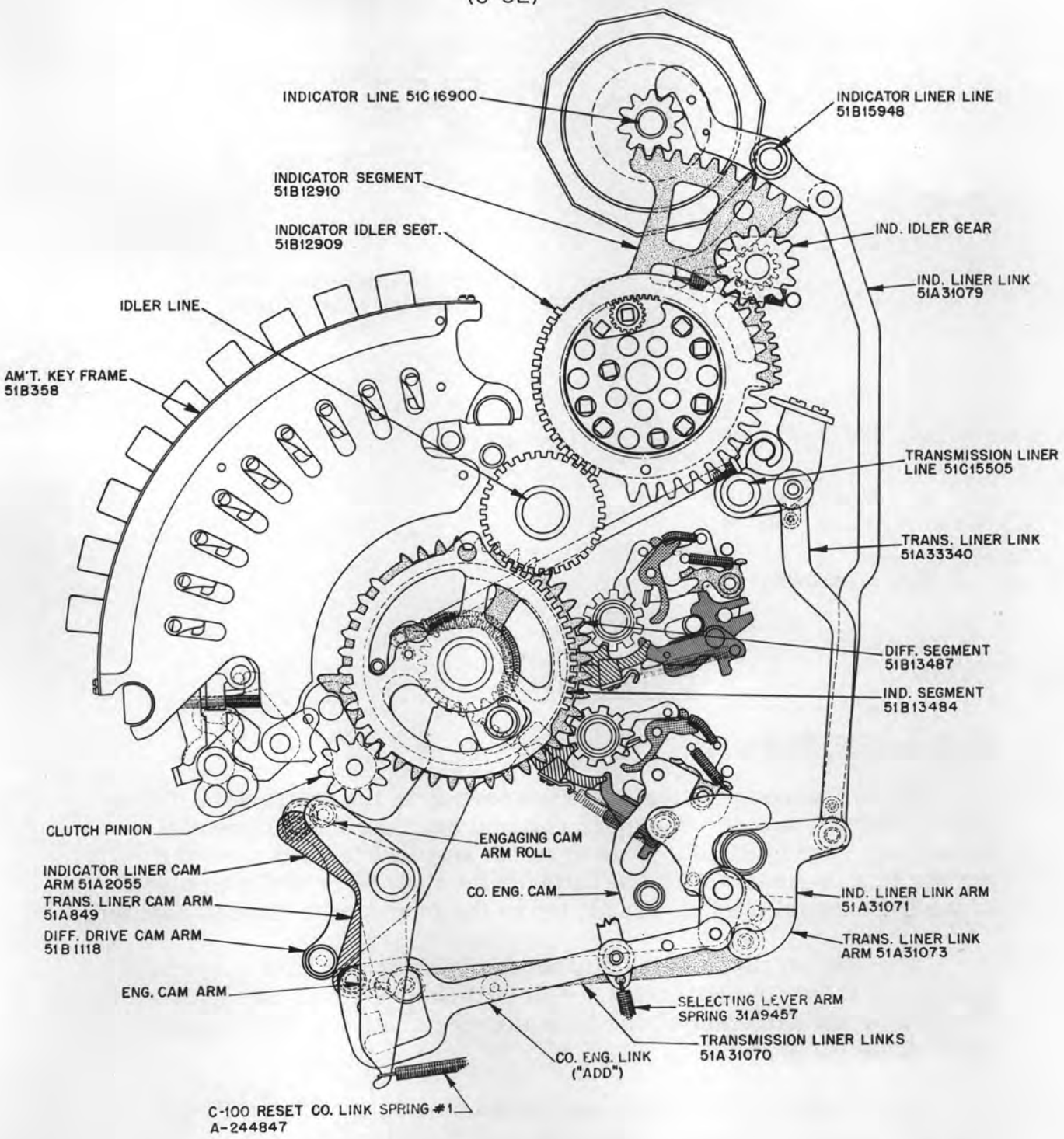
Counter Control Detent 51C19327

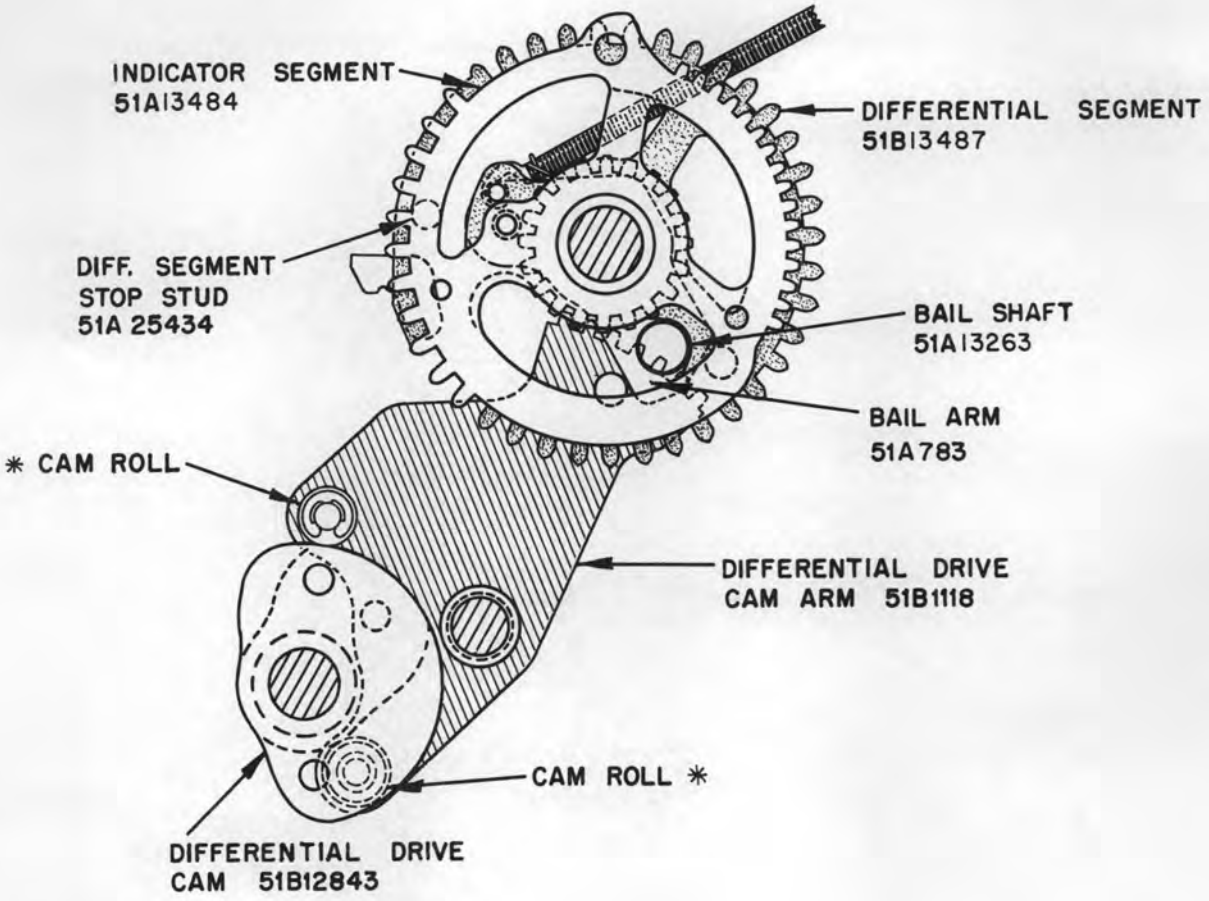
Changes selection of Lower Counter from Read to Reset whenever the Change-Balance Due key is depressed by lifting the Lower Counter Engaging Links an additional position.

SECTION "E"

DIFFERENTIAL

DIFFERENTIAL DRIVE (C-52)





* SEE ADJUSTMENTS

DIFFERENTIAL

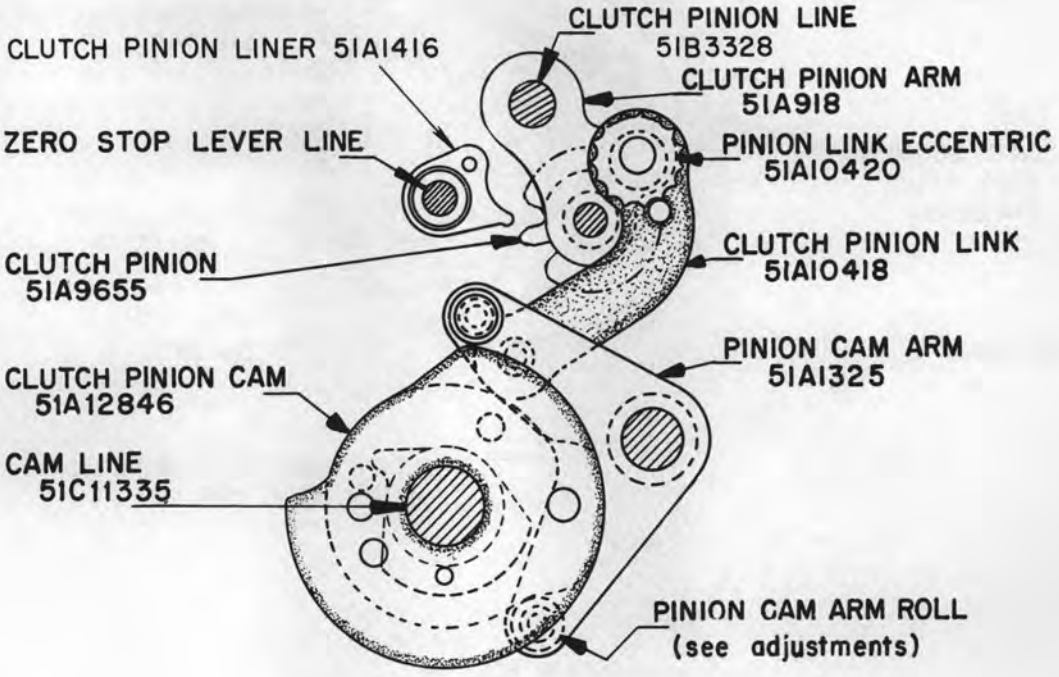
Amount Differential

In the "home" position, the high portion of the Differential Drive Cam 51B12893 is under the upper roll and stud and the Differential Drive Cam Arm 51B1118. This arm has segment teeth in the rear portion that is meshed with the Differential Shaft Gear which is pinned to the Differential Shaft holding it top to the front in the "home" position.

The Bail Arms are also pinned to this shaft and have assembled (pinned) to them, the Bail Shaft. The Bail Shaft extends through the openings in the Differential and Indicator Segments for each Amount Bank of the Differential.

The Clutch Pinions which are assembled on the Clutch Pinion Line are meshed with the Differential and Indicator Segment for each bank bonding the two together.

When an Amount Key is depressed, the Control Detent will move the Control Detent Arm down and the dwell in the arm will hook over the stud in the Zero Stop holding it to the front.



From home to 1/8 turn of the handle, the high portion of the Clutch Pinion Cam 51A12846 will move over the lower roll and stud in the Pinion Cam Arm 51A1325 and move it top to the front.

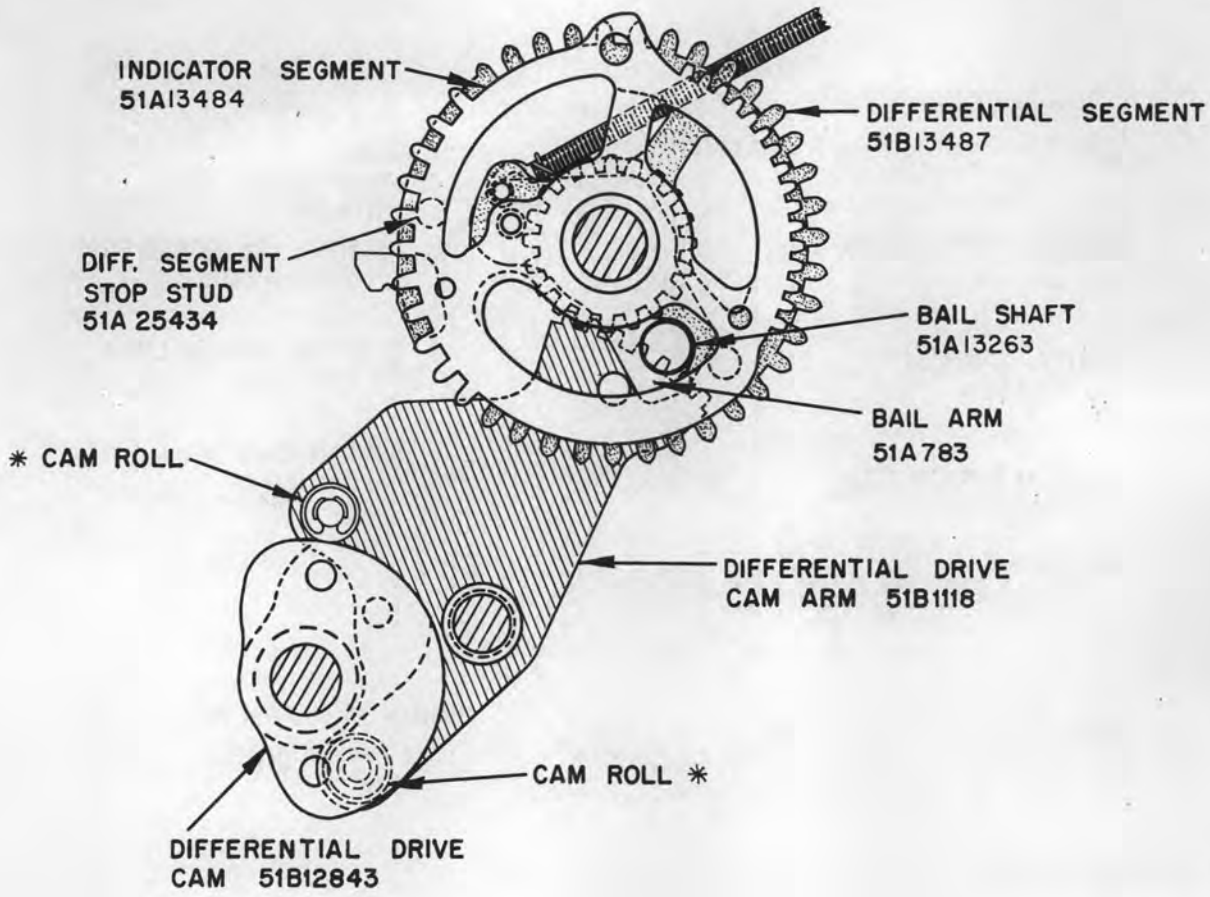
The Clutch Pinion Link 51A1048 is attached to the Pinion Cam Arm at the front and assembled over an eccentric and stud in the Clutch Pinion Cam Arm 51A918 which is pinned to the Clutch Pinion Line.

As the Pinion Cam Arm moves top to the front, the Clutch Pinion Link will move to the front occilating the Clutch Pinion Line top to the back. The Clutch Pinion will be moved to the front out of the teeth of the Indicator and Differential Segments and into engagement with the Clutch Pinion Liner which is pinned to the Zero Stop Lever Line.

From 1/8 to 3/8 turns of the handle, the high part of the Differential Drive Cam comes against the lower roll and stud in the Differential Drive Cam Arm moving it top to the front and moves the Bail Shaft to the front.

As the Bail moves to the front away from the Differential Segments, the Differential Segments Spring will cause a segment to follow top to the back. Also, the Indicator Segment will be picked up and moved top to the back.

As continued movement is given the Bail, the Differential Segment will follow until the block on the Segment is stopped by a key that is pressed.



* SEE ADJUSTMENTS

In banks where there is no Amount Key depressed, the Differential Segment will be stopped in the home position by Zero Stop.

After the Differential Segment is stopped, the Bail will continue to move causing the Differential Segment Spring to be stretched and the Indicator Segment will continue to be moved all the way up the bank. This will cause the Amount Indicator to be positioned to the Zero position.

At 3/8 turn of the handle, the Clutch Pinions are moved back into mesh with the Indicator and Differential Segments bonding them together. On an item operation, the Counter Pinions are carried into mesh with the Differential Segment at 3/4 turns of the handle.

From 3/4 to 1-1/8 turns of the handle, the Bail is carried to the back and will contact the Differential Segment and move it down in front. As the Segment is moved top to the front, the Counter Pinion will be turned to the back adding the amount corresponding to the number of positions the Differential was allowed to follow the Bail between 1/8 and 3/8 turns of the handle.

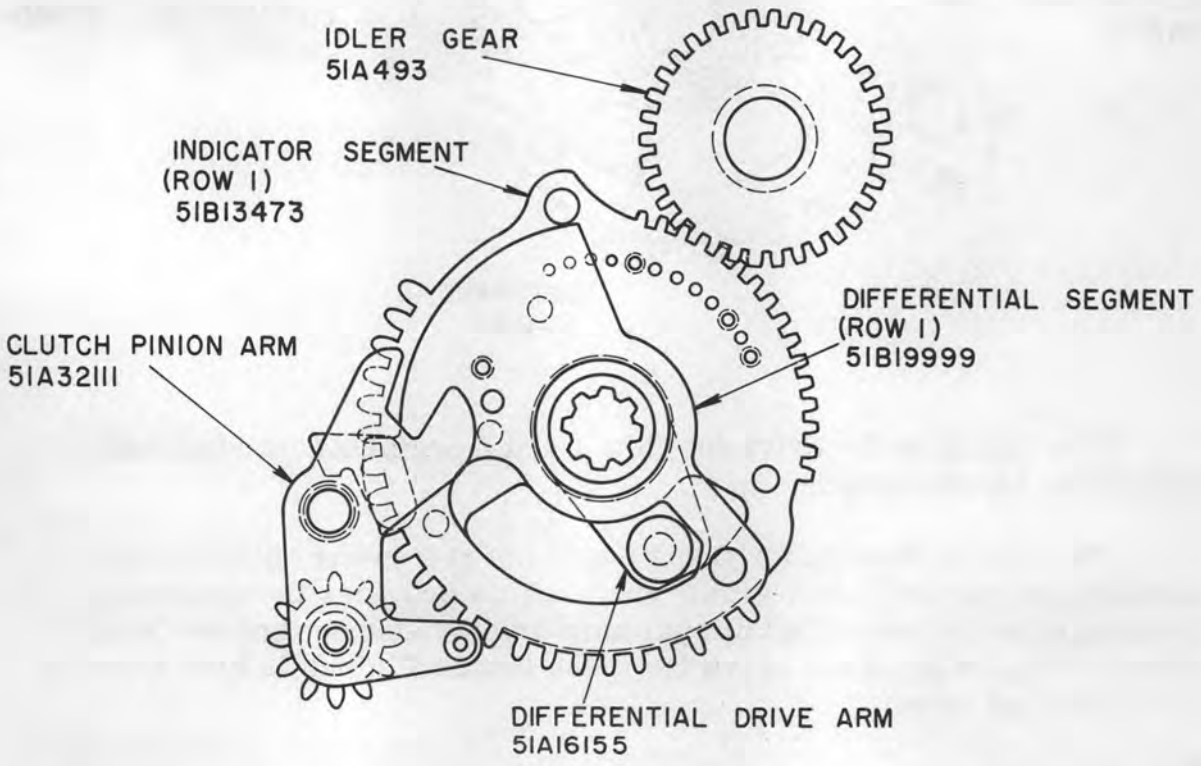
The Indicator Segment being bonded to the Differential Segment will be carried down in the front positioning the Indicator and Type Wheel to the amount corresponding to the key depressed.

The Counter is carried fully out of mesh with the Differential Segments at 1-1/8 turn of the handle.

In the event the machine is operated with the Amount Keybanks removed, the Indicator Segment will be positioned to the Zero position. At this time, the raised portion of the segment will butt against the Idler Gear.

The Differential Segment Springs will move the Differential Segments up the bank until the stud in the segment contacts the Differential Segment Stop on the Idler Line. This corresponds to the ninth position of the Amount Keybank and will hold the segment in proper alignment with the Indicator Segment to allow the Clutch Pinions to engage.

ROW I DIFFERENTIAL
(C-52)

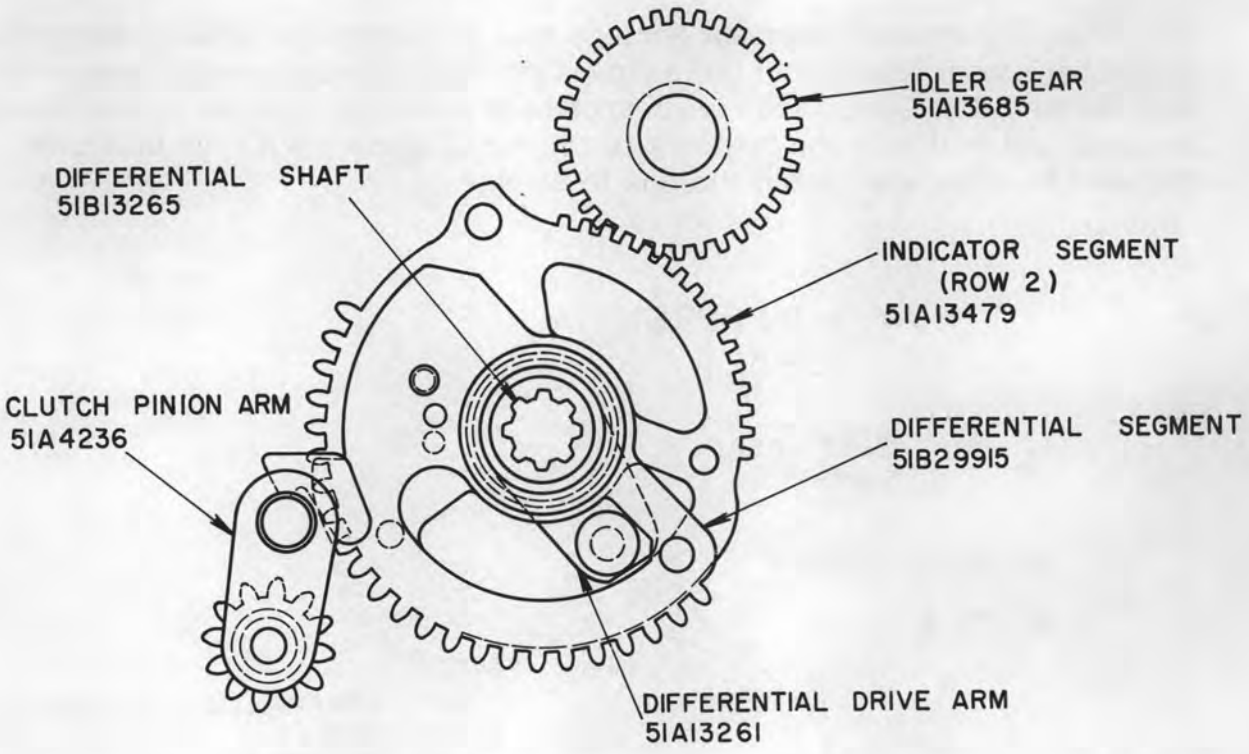


Transaction Differential

Row 1 and Row 2 Transaction Differentials are basically the same as the Amount Banks. The outstanding difference is the Indicator and Differential Segments have 12 stopping positions. Also, there is an absence of teeth on the back of the Differential Segments in the positions corresponding to those teeth used in the Amount Banks to move the Counter Pinions.

The Segments for Row 1 and 2 are driven by the Differential Drive Arms in each row. The hubs of these arms are cut to fit the spline cuts on the right end of the Differential Shaft. This provides a positive movement to the Row 1 and 2 Segments since the Differential Shaft is driven from the left end preventing the possibility of the Drive Arm torquing.

ROW 2 DIFFERENTIAL
C- 52



The timing of the drive for Row 1 and 2 Segments is identical to that of the Amount Rows.

The Clutch Pinions for these Segments are swung on individual Arms pinned to the Clutch Pinion Shaft. This provides the necessary clearance for the needed additional mechanism between the two Control Rows. The timing of the Drive for these Clutch Pinions is also identical to the Amount Row.

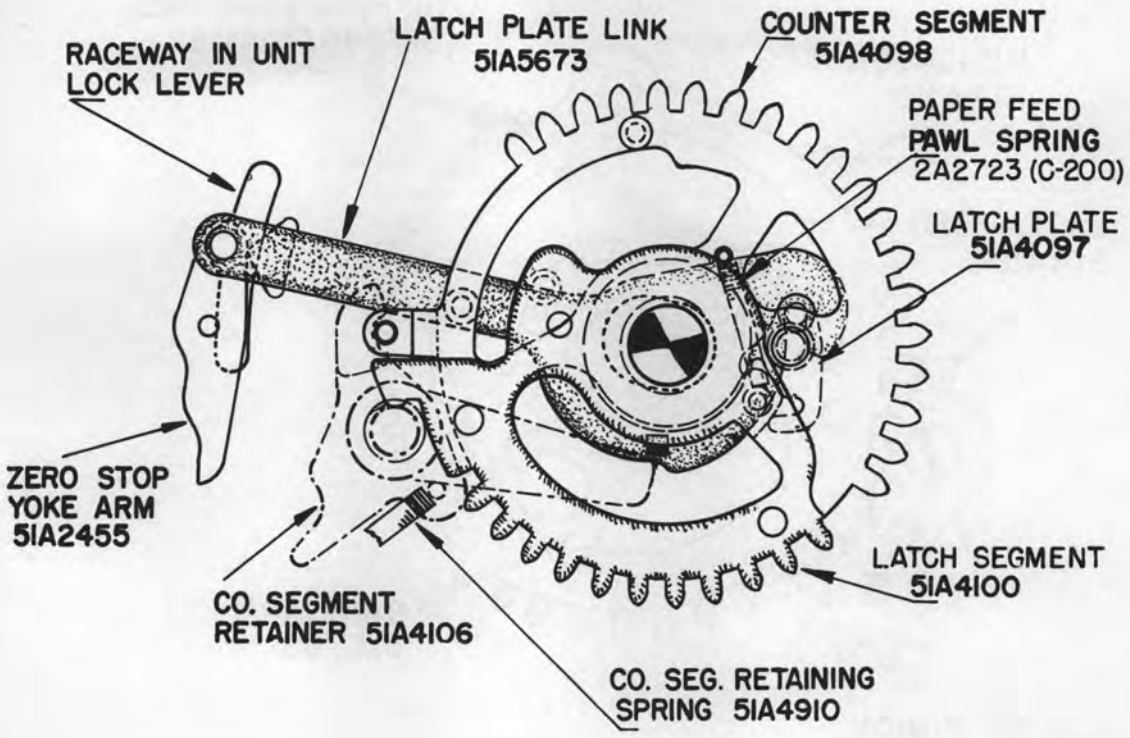
Row 10 Differential

Since Row 10 is used for both accumulating and the indentification of clerks, it is necessary to add another control to enable this bank to perform both functions.

In the "Register" position of the Unit Lock Lever, Row 10 is used as a Print Bank for the Clerk's initial identification. In any other position, it is used for accumulation purposes.

There is a raceway provided in the Unit Lock Lever that controls the Row 10 functions. The stud in the Zero Stop Yoke Arm rides in the raceway and has the Latch Plate Link connected to it on the right side of the Unit Lock Lever. This Link is swung over the Differential Shaft and the hooked portion over the stud in the Latch Plate that is assembled to the Counter Segment in Row 10.

DIFFERENTIAL ROW 10


RACEWAY IN UNIT LOCK LEVER
LATCH PLATE LINK 51A5673
COUNTER SEGMENT 51A4098
PAPER FEED PAWL SPRING 2A2723 (C-200)
LATCH PLATE 51A4097
ZERO STOP YOKE ARM 51A2455
CO. SEGMENT RETAINER 51A4106
LATCH SEGMENT 51A4100
CO. SEG. RETAINING SPRING 51A4910

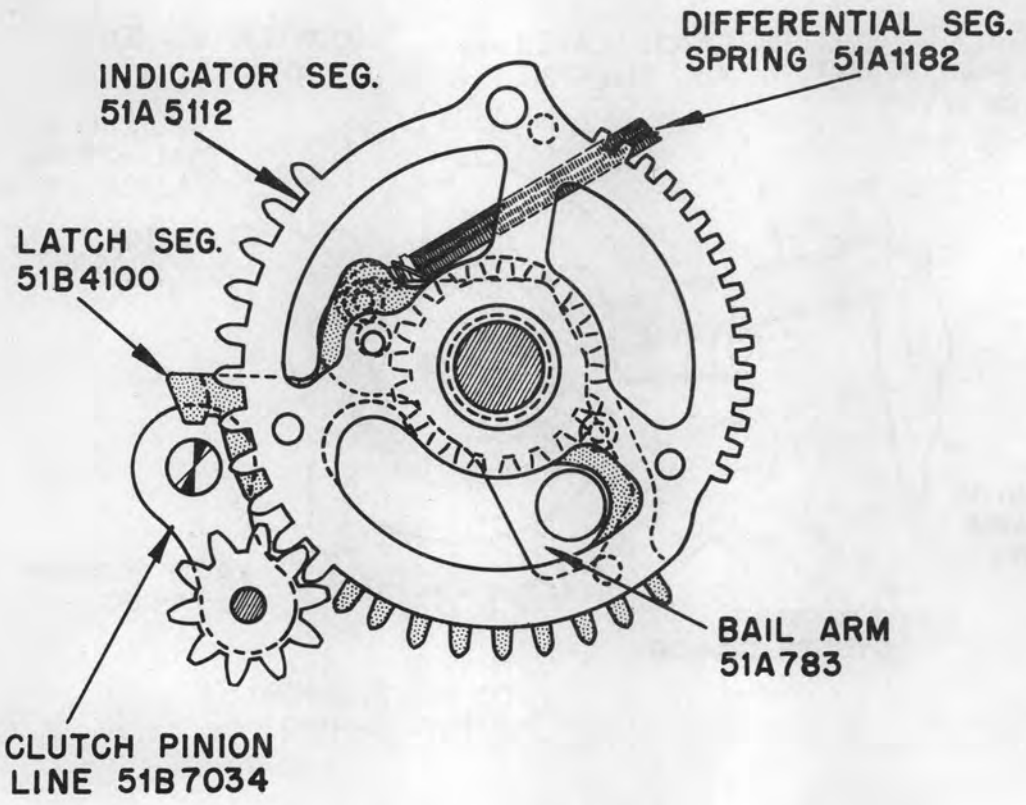
The bottom portion of the Latch is hook shaped and is held top to the back away from a stud in the Latch Segment and the "Register" position of the Unit Lock Lever.

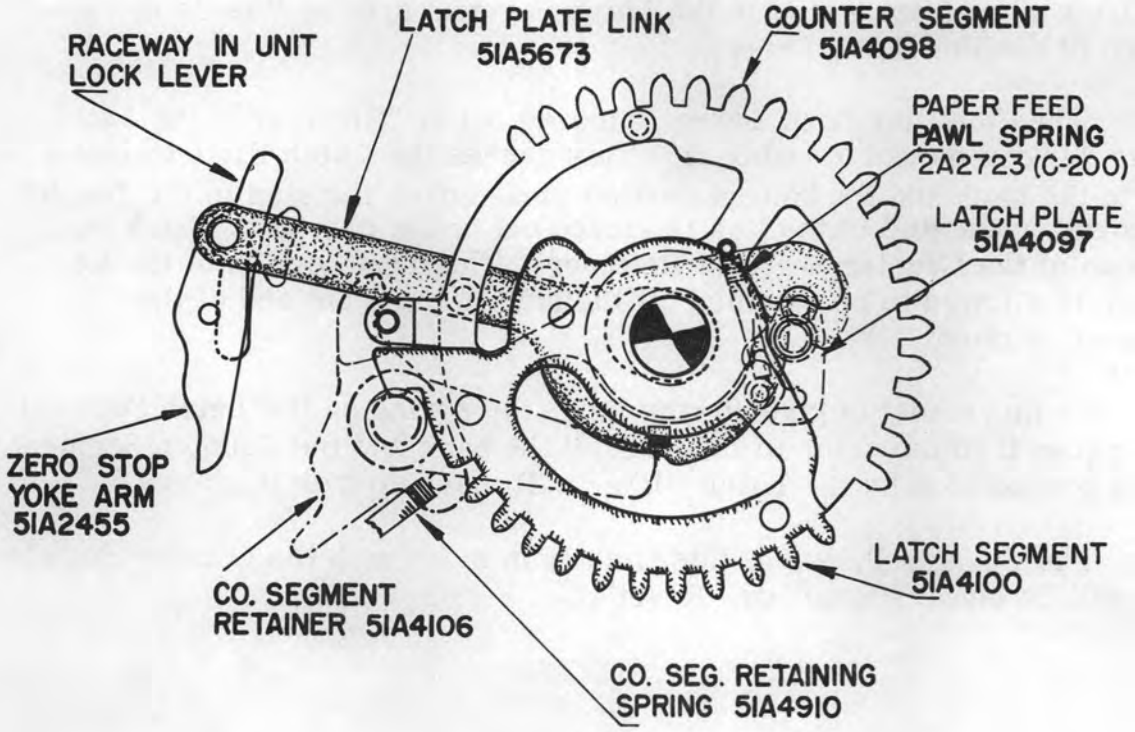
When the Unit Lock Lever is moved out of "Register", the Latch Plate Link is moved to the back. This causes the Latch Plate to move top to the back and the bottom portion moves over the stud in the Latch Segment. The stud in the link is moved out of the path of the back extension of the Counter Segment Retainer. The front portion of the Retainer is allowed to be cammed off the stud in the front end of the Counter Segment.

As movement is given to the Bail, the spring on the Latch Segment will cause it to move top to the back up the bank and the Counter Segment, being bonded to it by the Latch Plate, will move up with it.

The Counter Pinion at this time is in mesh with the Counter Segment and will be either "Read" or "Reset".

ROW 10

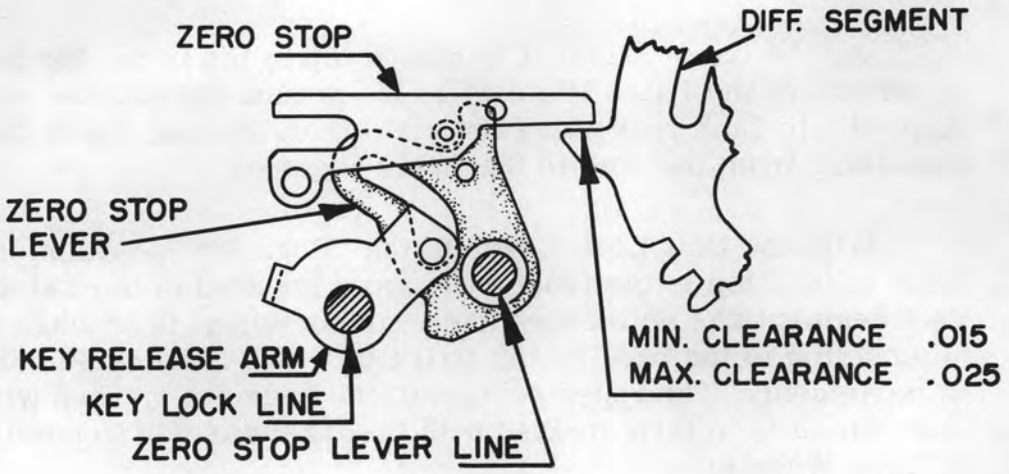

DIFFERENTIAL SEG.
SPRING 51A1182
INDICATOR SEG.
51A 5112
LATCH SEG.
51B4100
BAIL ARM
51A783
CLUTCH PINION
LINE 51B7034


RACEWAY IN UNIT
LOCK LEVER
LATCH PLATE LINK
51A5673
COUNTER SEGMENT
51A4098
PAPER FEED
PAWL SPRING
2A2723 (C-200)
LATCH PLATE
51A4097
ZERO STOP
YOKE ARM
51A2455
LATCH SEGMENT
51A4100
CO. SEGMENT
RETAINER 51A4106
CO. SEG. RETAINING
SPRING 51A4910

As the Latch Segment is moved top to the back, the Stud in the upper end of the Latch Plate will ride around the outside surface of the Latch Plate Link preventing the plate from moving top to the front and unhooking from the stud in the Latch Segment.

With the Unit Lock Lever in the "Register" position, the Latch Plate is held top to the front away from the Stud in the Latch Segment. This Segment has no teeth on the rear portion of it so when it is allowed to move top to the back by the Bail Shaft, the Counter Pinion will receive no movement. The upper portion of the Segment meshes with the Idler Gear which is in turn meshed with the transmission to position the Row 10 Type Wheels.

Also, with the Latch Plate Link to the front, the stud in the rear end of it is over the back extension of the Counter Segment Retainer preventing it from being cammed off the Stud in the front end of the Counter Segment.

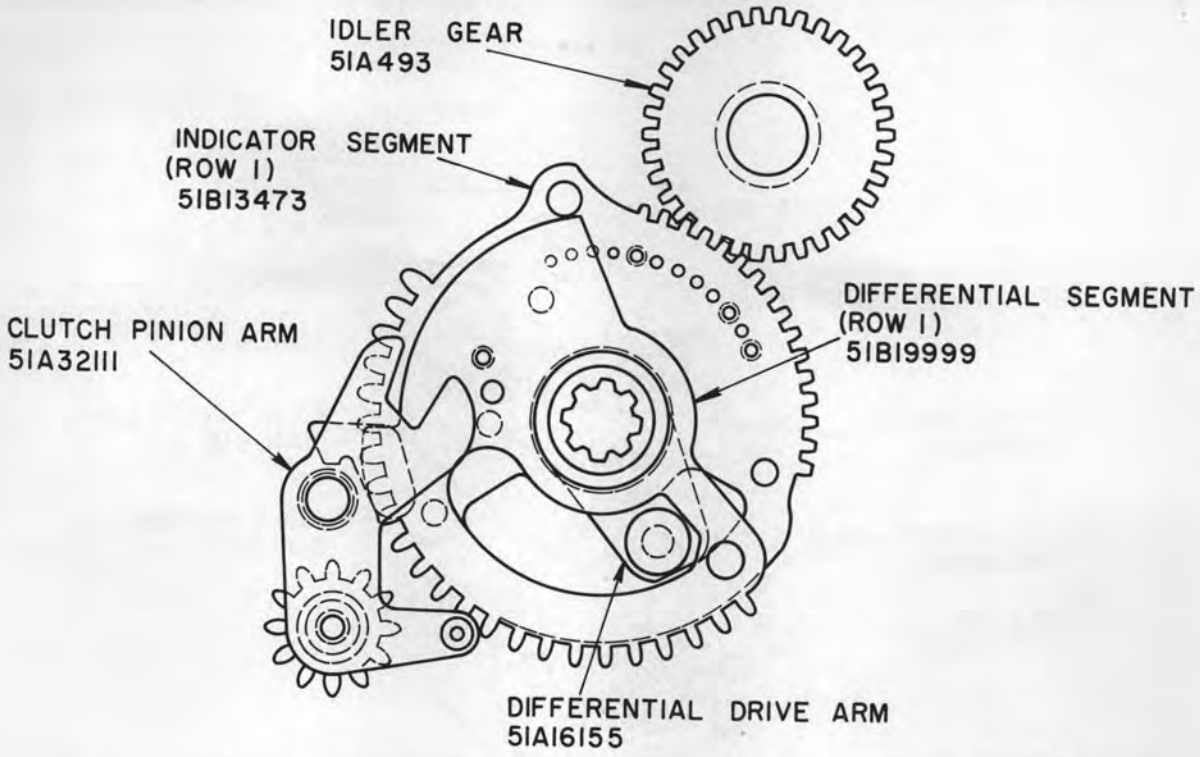


ADJUSTMENTS

Differential Drive

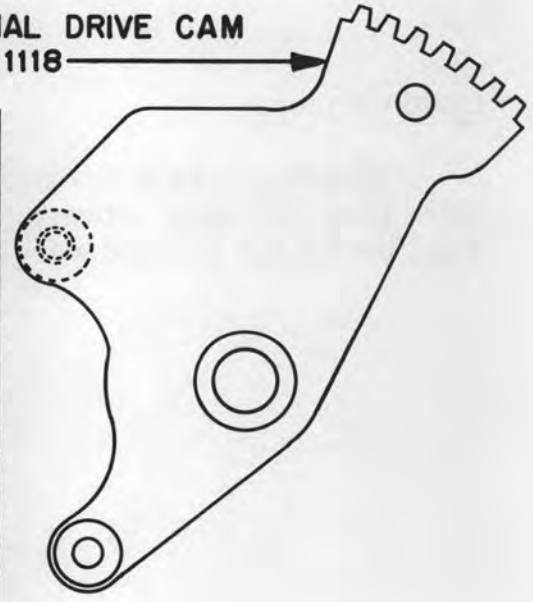
With the machine "home" the block on the Differential Segment must be .015 to .025 below the Zero Stop. The upper roll on the Differential Drive Cam Arm determines this clearance.

51X28435	Diff.	Drive	Cam	Roll	.420	51X28452	Diff.	Drive	Cam	Roll	.456
407	"	"	"	"	.426	439	"	"	"	"	.458
436	"	"	"	"	.431	445	"	"	"	"	.460
442	"	"	"	"	.435	453	"	"	"	"	.462
406	"	"	"	"	.4373	440	"	"	"	"	.464
443	"	"	"	"	.440	454	"	"	"	"	.466
447	"	"	"	"	.442	446	"	"	"	"	.468
437	"	"	"	"	.444	455	"	"	"	"	.470
448	"	"	"	"	.446	441	"	"	"	"	.472
449	"	"	"	"	.448	444	"	"	"	"	.474
438	"	"	"	"	.450	457	"	"	"	"	.476
450	"	"	"	"	.452	456	"	"	"	"	.478
451	"	"	"	"	.454	458	"	"	"	"	.480

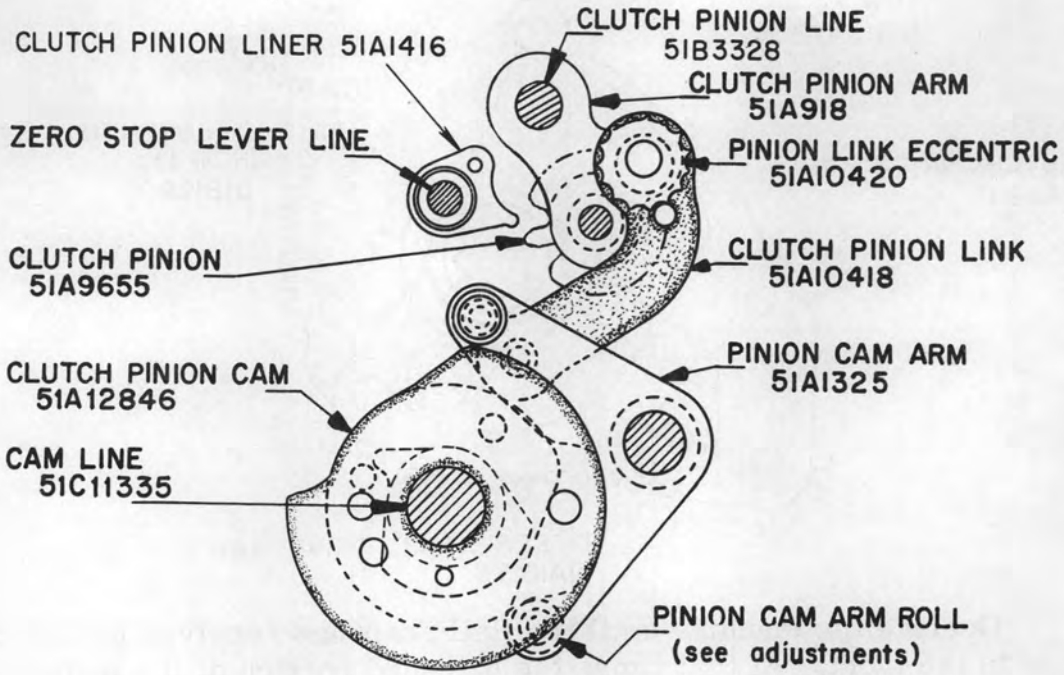


Operate the machine until the Bail Shaft has received its full movement to the front. At that time, the extended portion of the Indicator Segment should be within .005 from bottoming on the Idler Gear.

The lower roll on the Differential Drive Cam Arm determines how far the Indicator Segment is driven top to the back.



51A 4383	DIFF.	DRIVE	CAM	ROLL	.420
51A 3306	"	"	"	"	.426
51A 4384	"	"	"	"	.431
51A 11602	"	"	"	"	.435
51A 1120	"	"	"	"	.4373
51A 11603	"	"	"	"	.440
51X 28101	"	"	"	"	.442
51A 4385	"	"	"	"	.444
51X 28102	"	"	"	"	.446
51X 28103	"	"	"	"	.448
51A 4386	"	"	"	"	.450
51X 28104	"	"	"	"	.452
51X 28105	"	"	"	"	.454
51X 28106	"	"	"	"	.456
51A 4387	"	"	"	"	.458
51A 26356	"	"	"	"	.460
51X 28107	"	"	"	"	.462
51A 4388	"	"	"	"	.464
51X 28108	"	"	"	"	.466
51A 26357	"	"	"	"	.468
51X 28109	"	"	"	"	.470
51A 10996	"	"	"	"	.472
51A 26335	"	"	"	"	.474
51X 28110	"	"	"	"	.476
51A 10997	"	"	"	"	.478
51X 28111	"	"	"	"	.480



Clutch Pinions

The Pinion Link Eccentric should be adjusted so that there is no more than .015 play between the Indicator and Differential Segment when the Clutch Pinions were meshed with them.

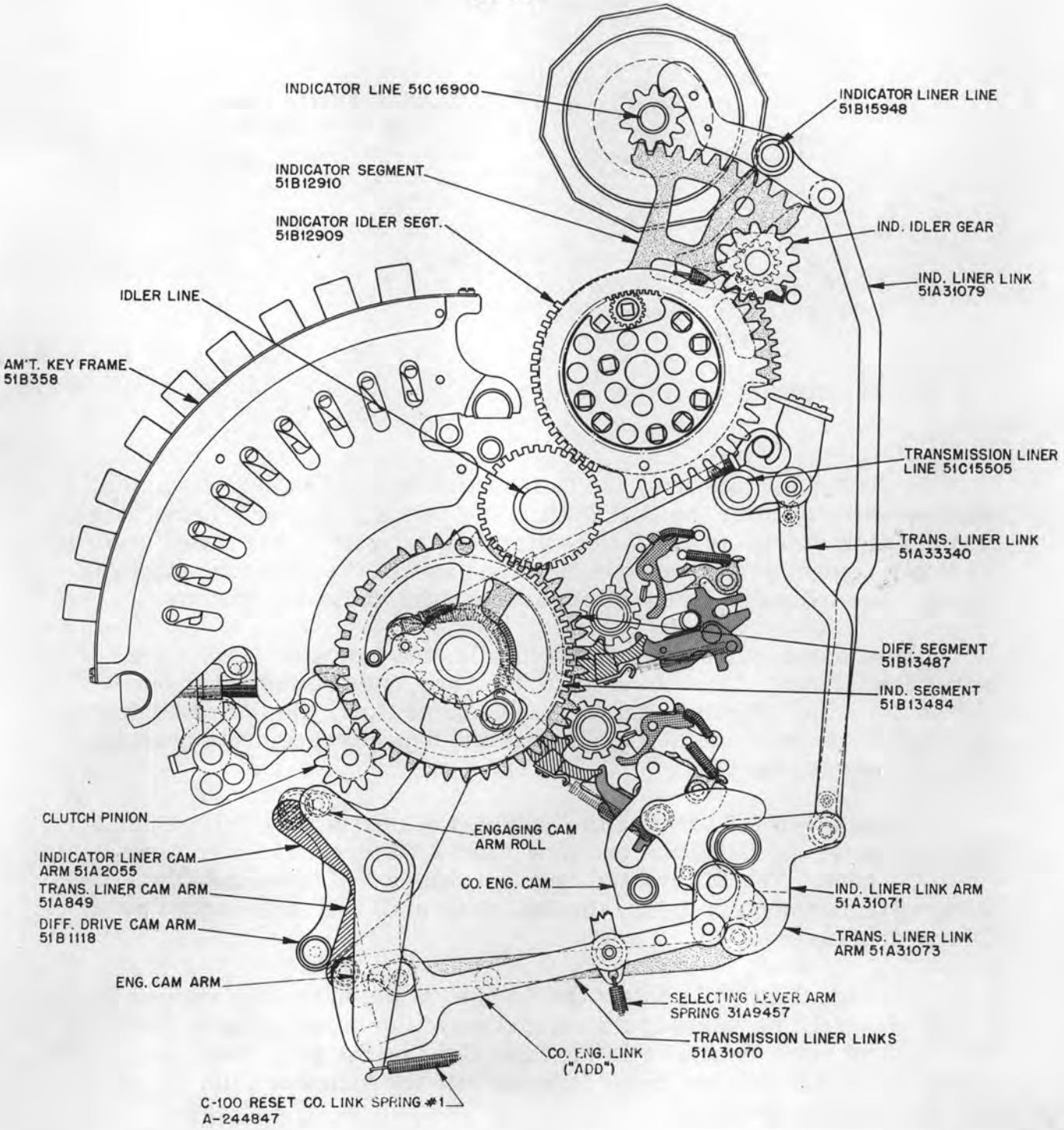
SECTION "F"

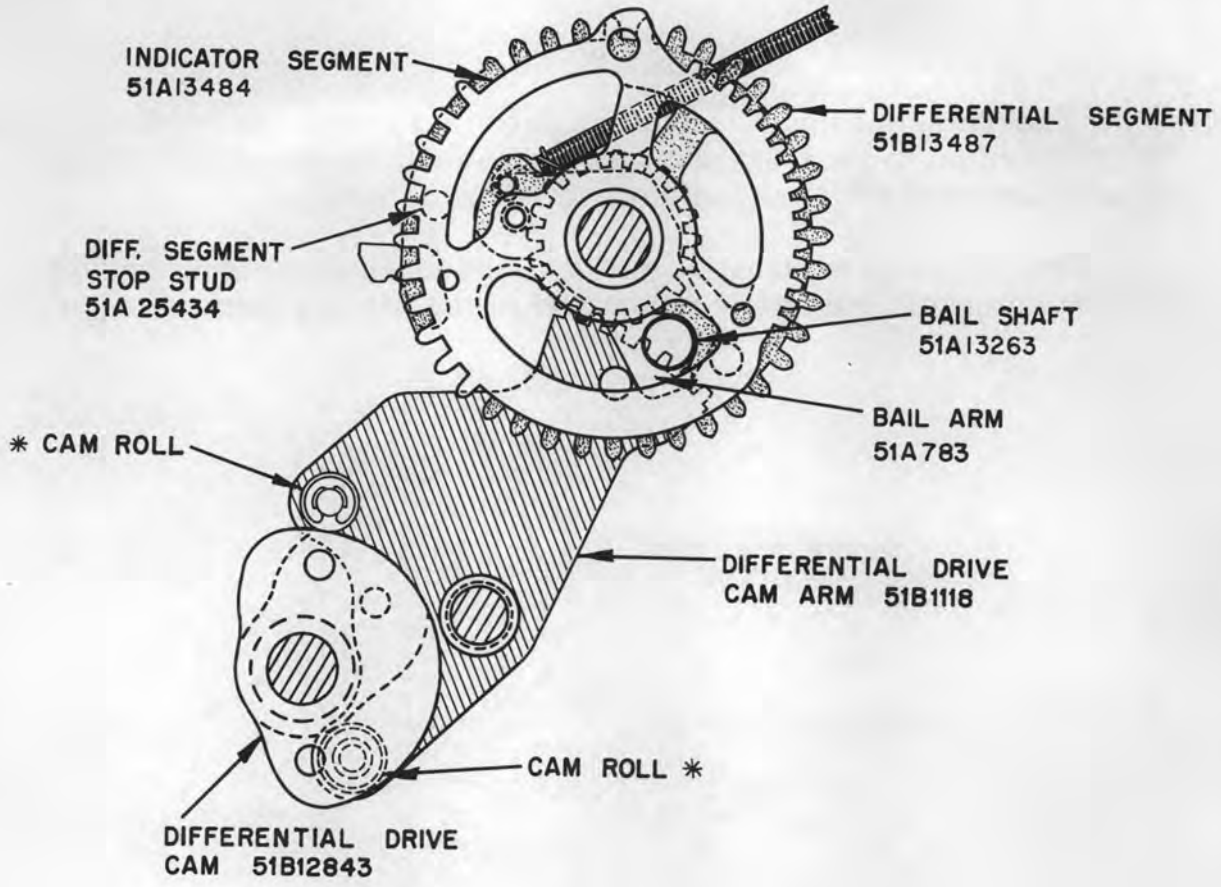
TRANSMISSION

The Transmission Assembly is used to transmit the movement from the Differential to the front and back Indicators, the Detail and Receipt Type Wheels and the Change Dispenser Control Switches.

The following explanation will give the mechanical movement of the Transmission and how it accomplishes the various functions.

DIFFERENTIAL DRIVE
(C-52)





* SEE ADJUSTMENTS

In the "home" position, the Differential Segment is held down the bank top to the front by the Bail Shaft. The Indicator Segment being bonded by the Clutch Pinions to the Differential Segment will be positioned according to the amount of the previous operation as will the Indicator and Type Wheel. The Indicator Liner is in mesh with the Indicator Pinions.

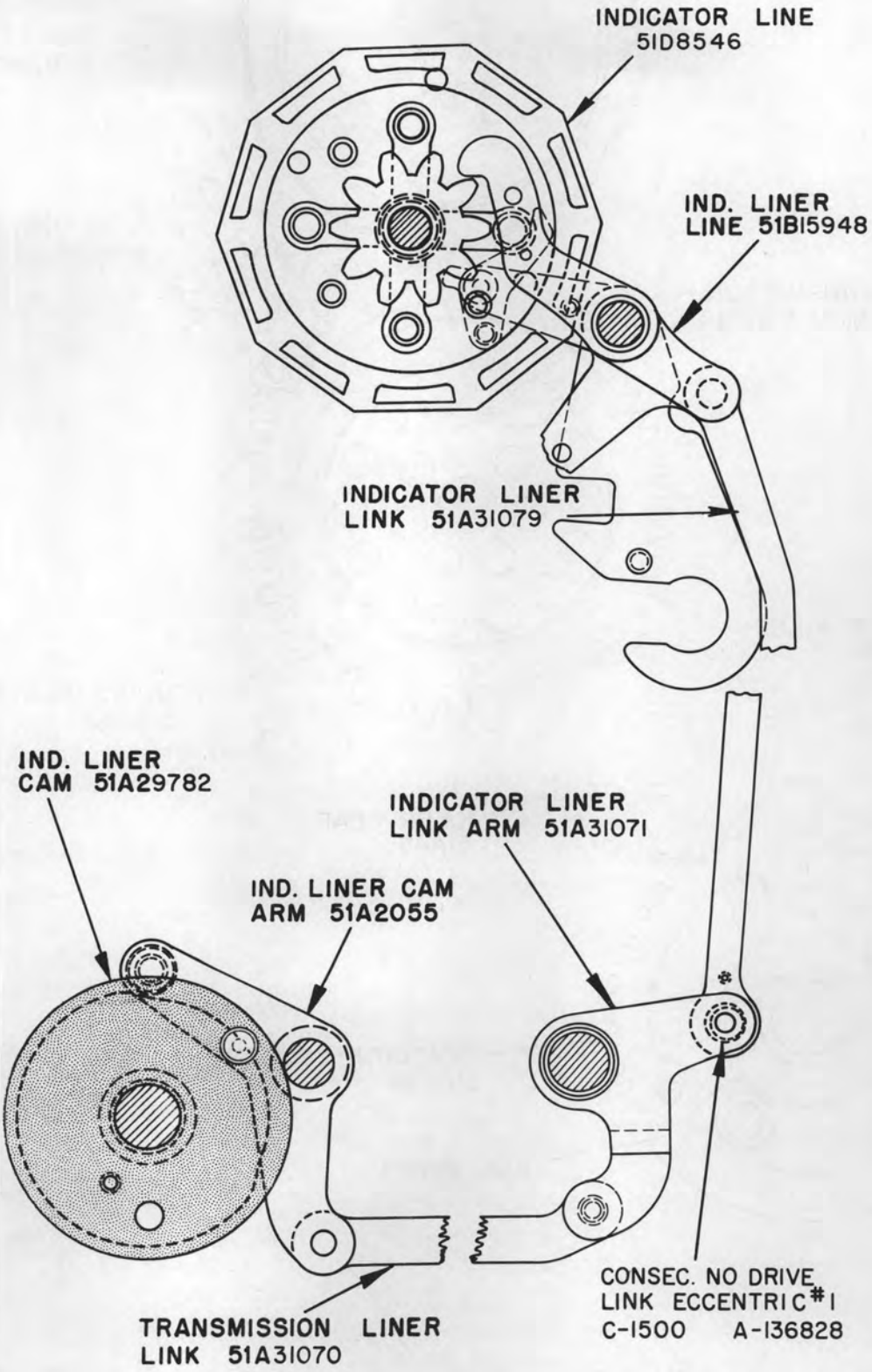
From home to 1/8 turn or the handle, the Indicator Liner Cam moves the Indicator Liner Line top to the back, moving the Liner out of mesh with the Indicator Pinion. At the same time, the Clutch Pinions will be disengaged from the Differential and Indicator Segments breaking the bond between the two.

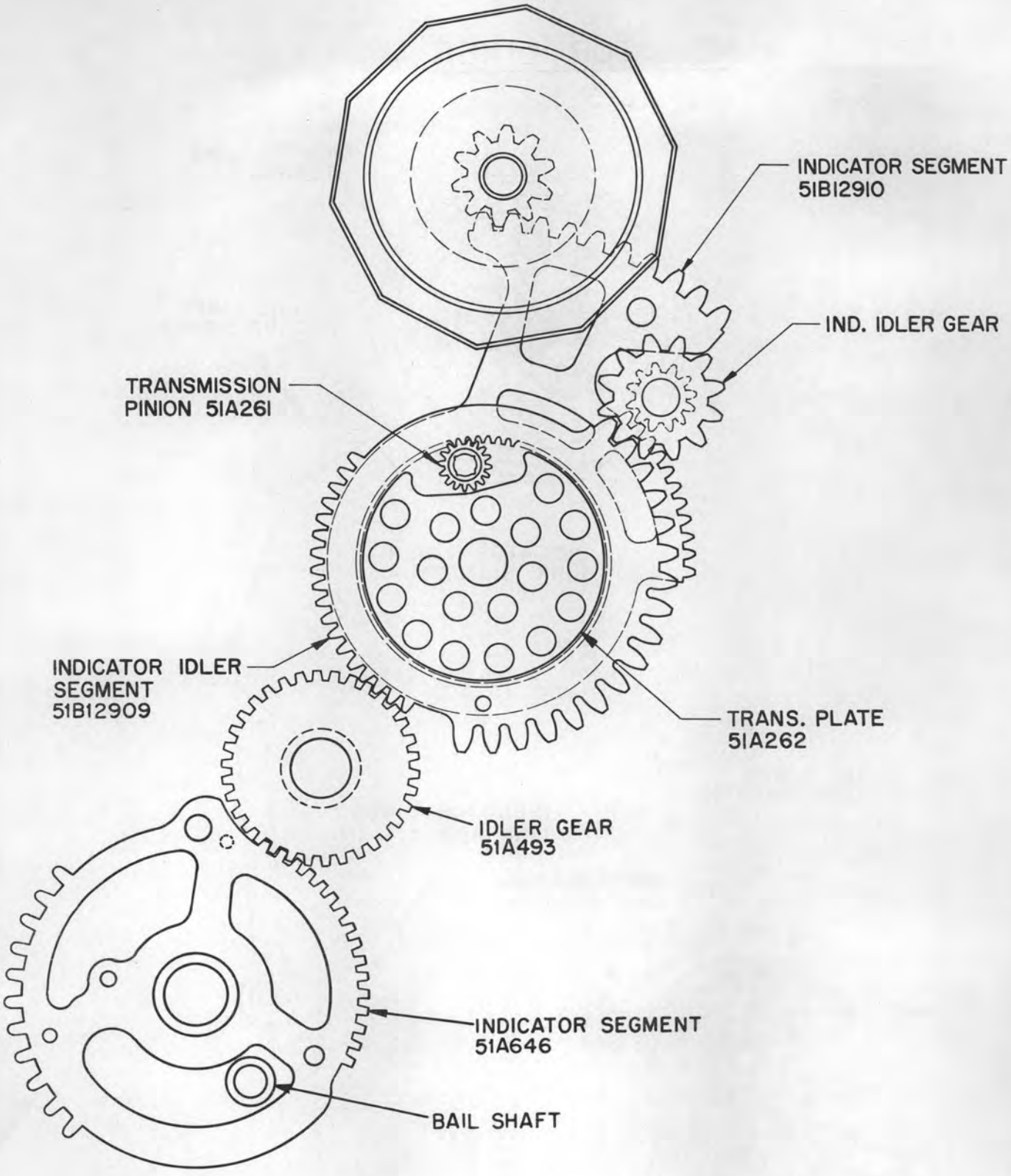
From 1/8 to 3/8 turns of the handle, the Differential Drive Cam Arm will move the Bail Shaft and Row 1 and 2 Differential Drive Arms top to the back. The Differential Segment Spring will then cause the Differential Segments to follow the Bail Shaft until they are stopped by the key depressed.

The Bail Shaft will contact the "spoke" of the Indicator Segment where it was left on the previous operation and move the segment top to the back. The segment being meshed with the Idler Gear on the Idler Gear Line would turn it top to the front and being in mesh with the Indicator Idler Segment will turn it top to the back.

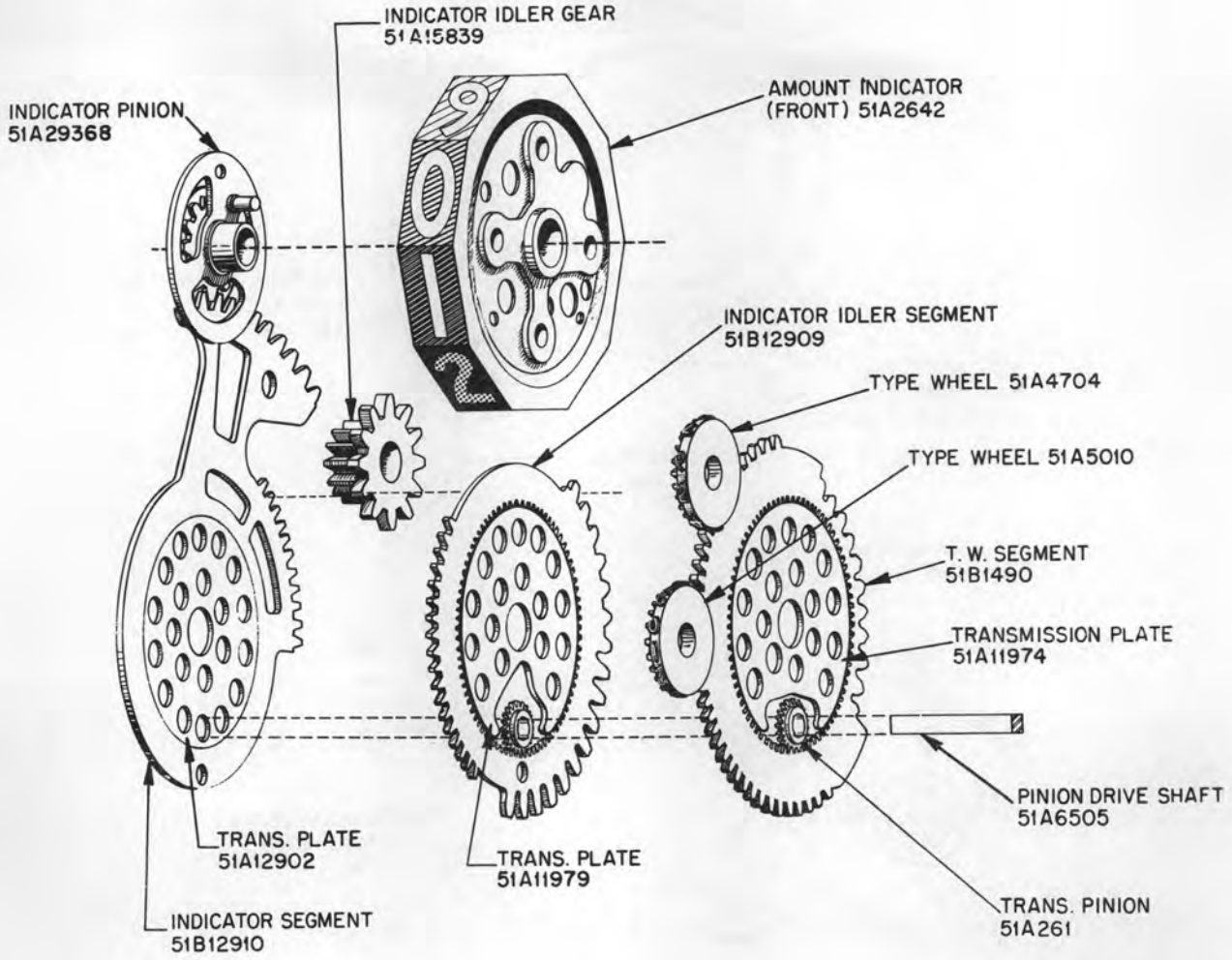
INDICATOR LINER

(C-52)





The Indicator Idler Segment is meshed with the Indicator Idler Pinion and will turn it and the Indicator Segment which is also meshed with the pinion to the "Zero" position. The Indicator Segment is meshed with the Indicator Pinion which is assembled to the Indicator. This will position the front Indicator to the "Zero" position.

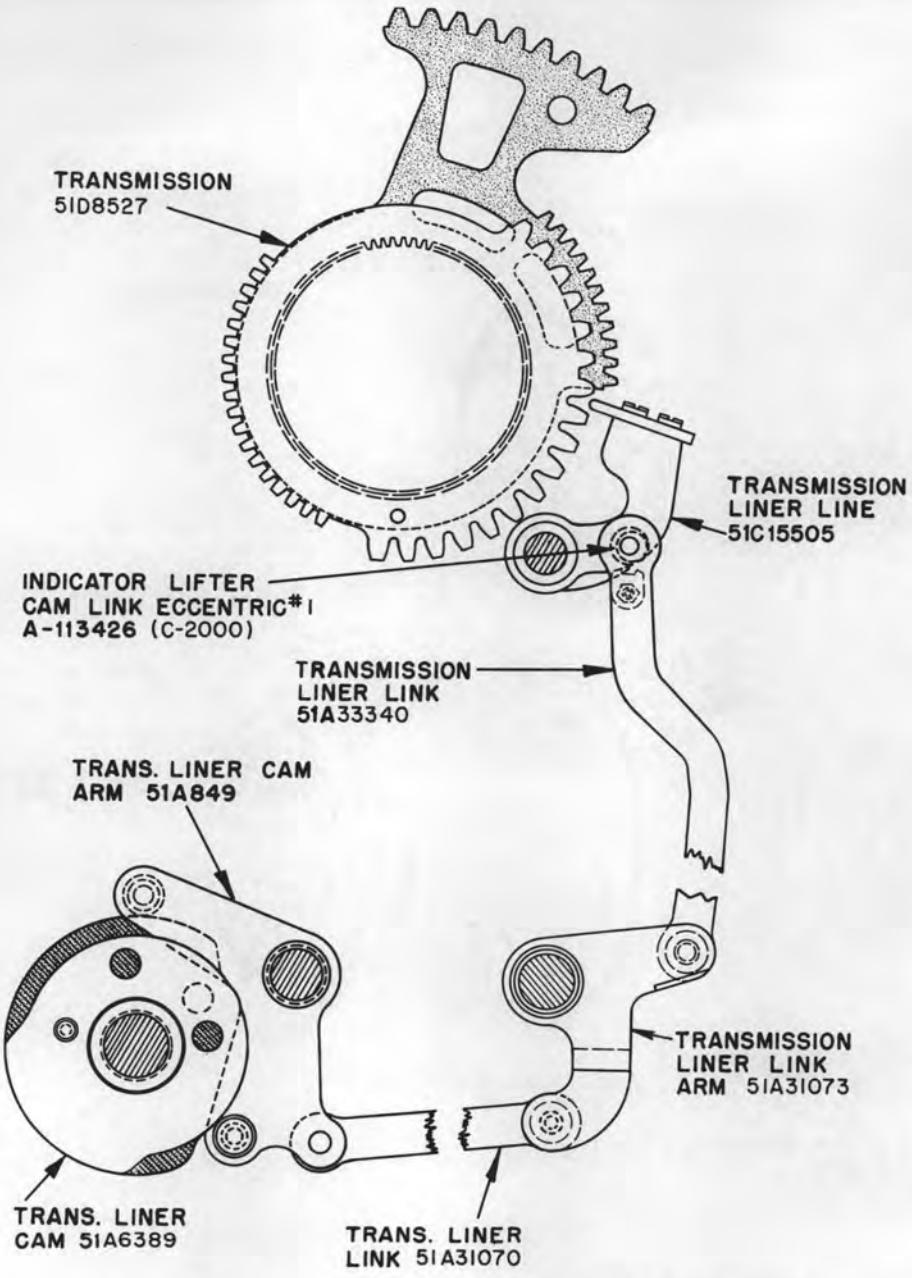


The Indicator Idler Segment 51B12909 is meshed with a Transmission Pinion (internal) 51A261 which is retained in position over a Square Shaft and as the Idler Segment is moved the Square Shaft will be turned and the back Indicator Idler Segment will be positioned by its Transmission Pinion (internal) over the same Square Shaft.

The Back Indicator Idler Segment is meshed with an Idler Pinion which is also meshed with the back Indicator Segment. This will position the back Indicator to the "Zero" position.

The same Square Shaft extends to the right and has an Internal Pinion which is meshed with the Transmission Segment and drives the Detail and Receipt Type Wheels. These Type Wheels will also be positioned to the "Zero" position.

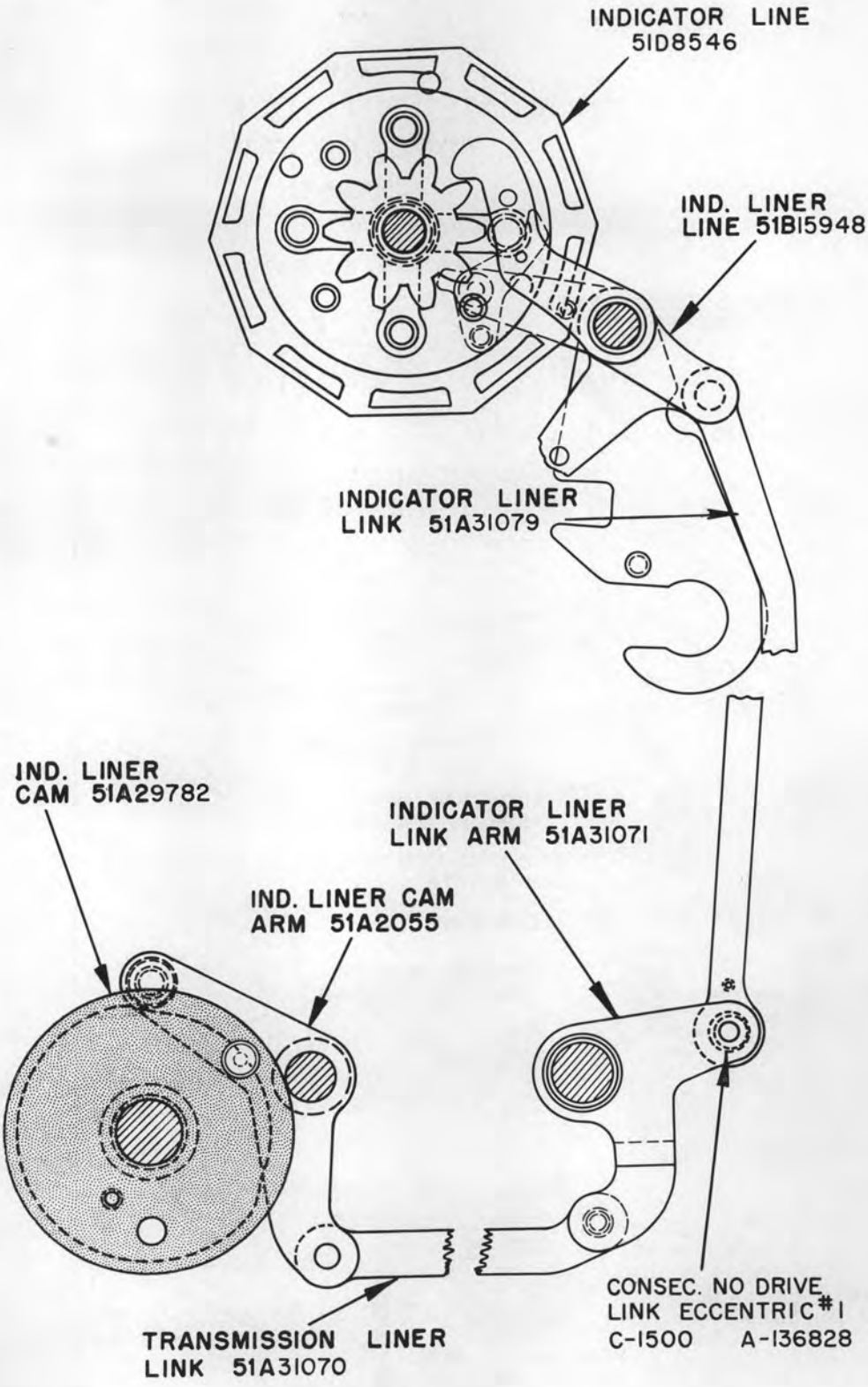
At 3/8 turns of the handle, the Clutch Pinion will be engaged with the Differential and Indicator Segments bonding the two.



From 3/4 to 1-1/8 turn of the handle, the Bail Shaft is moved to the back moving the Differential Segments down in the bank to the "Zero" position. Since the Clutch Pinion has bonded the Indicator Segment to the Differential Segment, the Indicator Segment is also moved down the bank the corresponding number of positions the Differential Segment was allowed to travel before it was stopped by the Key depressed.

The Indicator Segment will cause the Idler Pinion to move top to the back positioning the front and back indication, Detail and Receipt Type Wheels to the position corresponding to the key depressed through the connections in the transmission.

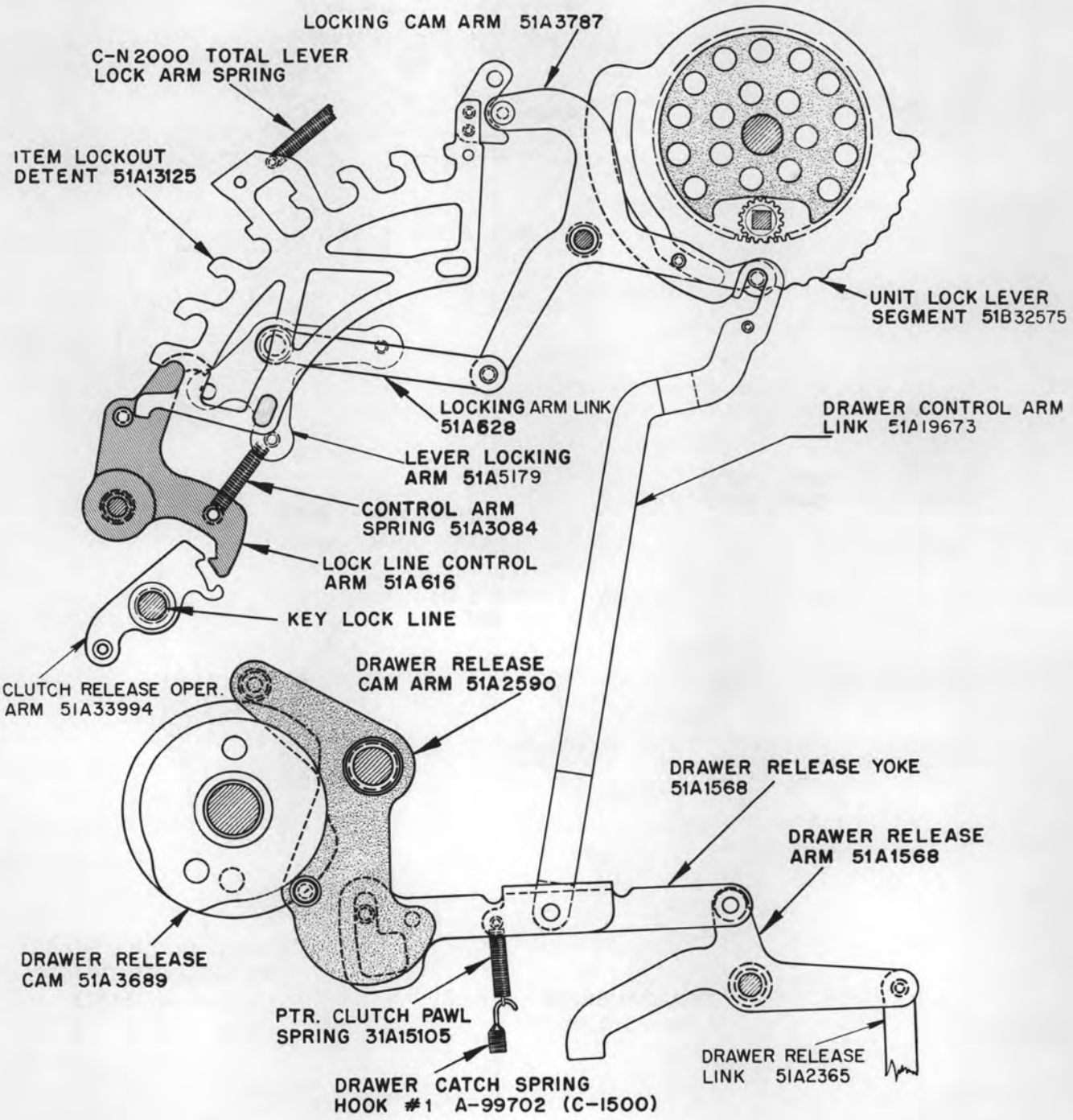
Just after 1-1/8 turn of the handle, the Transmission Liner Cam 51A6389 moves the Transmission Liner Cam Arm top to the front and through the linkage moves the Transmission Liner in to mesh with the Transmission. This aligns the transmissions to allow the impression to be made on the detail and receipt and to position the Indication properly which permits the Indicator Liner to mesh with the Indicator Pinions.



At 1-1/4 turn of the handle, the Indicator Liner Cam moves away from the roll on the Liner Cam Arm 51A2055 allowing the Indicator Liner Spring to move the Indicator Liner into mesh with the Indicator Pinions to align the Indication.

At 1-1/2 turns of the handle, the Transmission Liner is moved out of mesh with the Transmission Segments.

ROW 10, UNIT LOCK LEVER LOCKOUT
DRAWER CONTROL
(C-52)


LOCKING CAM ARM 51A3787
C-N2000 TOTAL LEVER LOCK ARM SPRING
ITEM LOCKOUT DETENT 51A13125
UNIT LOCK LEVER SEGMENT 51B32575
LOCKING ARM LINK 51A628
DRAWER CONTROL ARM LINK 51A19673
LEVER LOCKING ARM 51A5179
CONTROL ARM SPRING 51A3084
LOCK LINE CONTROL ARM 51A616
KEY LOCK LINE
CLUTCH RELEASE OPER. ARM 51A33994
DRAWER RELEASE CAM ARM 51A2590
DRAWER RELEASE YOKE 51A1568
DRAWER RELEASE ARM 51A1568
DRAWER RELEASE CAM 51A3689
PTR. CLUTCH PAWL SPRING 31A15105
DRAWER RELEASE LINK 51A2365
DRAWER CATCH SPRING HOOK #1 A-99702 (C-1500)

Row 10, Unit Lock Lever, Row 1 Interlock

The Unit Lock Lever Segment 51B32575 is located in the Transmission above Row 10. It receives the identical movement of the Row 1 Indicator Segment through the Transmission Pinion Shaft.

The segment has a camming raceway in which rides a stud that is in the Locking Cam Arm 51A3787. This raceway has a high and low camming surface and the various positions of Row 1 will determine which surface will control the Locking Cam Arm. The high surface is in positions "zero", one and two and the rest of the positions are low.

On an item operation, the Row 1 Indicator Segment is positioned to the 11th position. In this position, the raceway is low. The Locking Cam Arm is held top to the front moving the Item Lockout Detent to the front locking the key in Row 10 that has been depressed and locking out all other Row 10 keys.

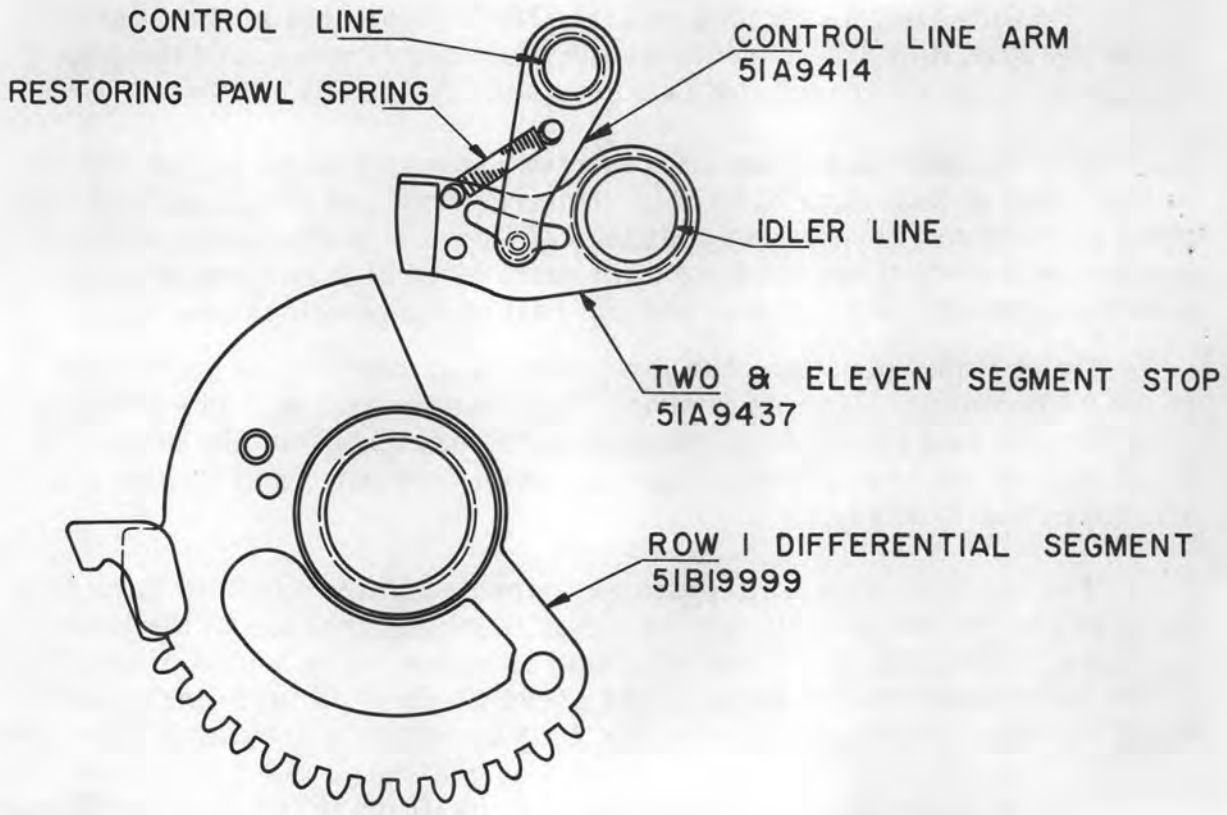
The Locking Arm Link which is connected to the Locking Cam Arm is moved to the back occilating the Lever Locking Arm top to the back. The stud in the front portion of this arm is moved up in a path of the "nose" of the Lock Line Control Arm. This prevents the stud in the Arm from being cammed out of the index of the Unit Lock Lever locking it in position.

The back end of the Locking Cam Arm will move the Drawer Release Link up to disable the Drawing opening mechanism.

On a Change-Total operation, the Row 1 Indicator Segment is positioned to the zero position and on a Balance Due operation the segment is moved to the second position. In either of these positions, the high surface of the Camming raceway in the Unit Lock Lever Segment is moved over the stud in the Locking Cam Arm moving it top to the back.

The back extension will allow the Drawer Release Link to move down abling up to Drawer Opening mechanism. The upper extension will allow the Item Lock-Out Detent to move up the Row 10 Keybank unlocking the Row 10 keys. The lower extension will move the Locking Arm Link to the front occilating the Locking Lever Arm top to the front positioning the stud in the front portion below the "nose" of the Lock Line Control Arm allowing the Unit Lock Lever to be moved.

TWO AND ELEVEN SEGMENT STOP
(C-52)



Two And Eleven Segment Stops

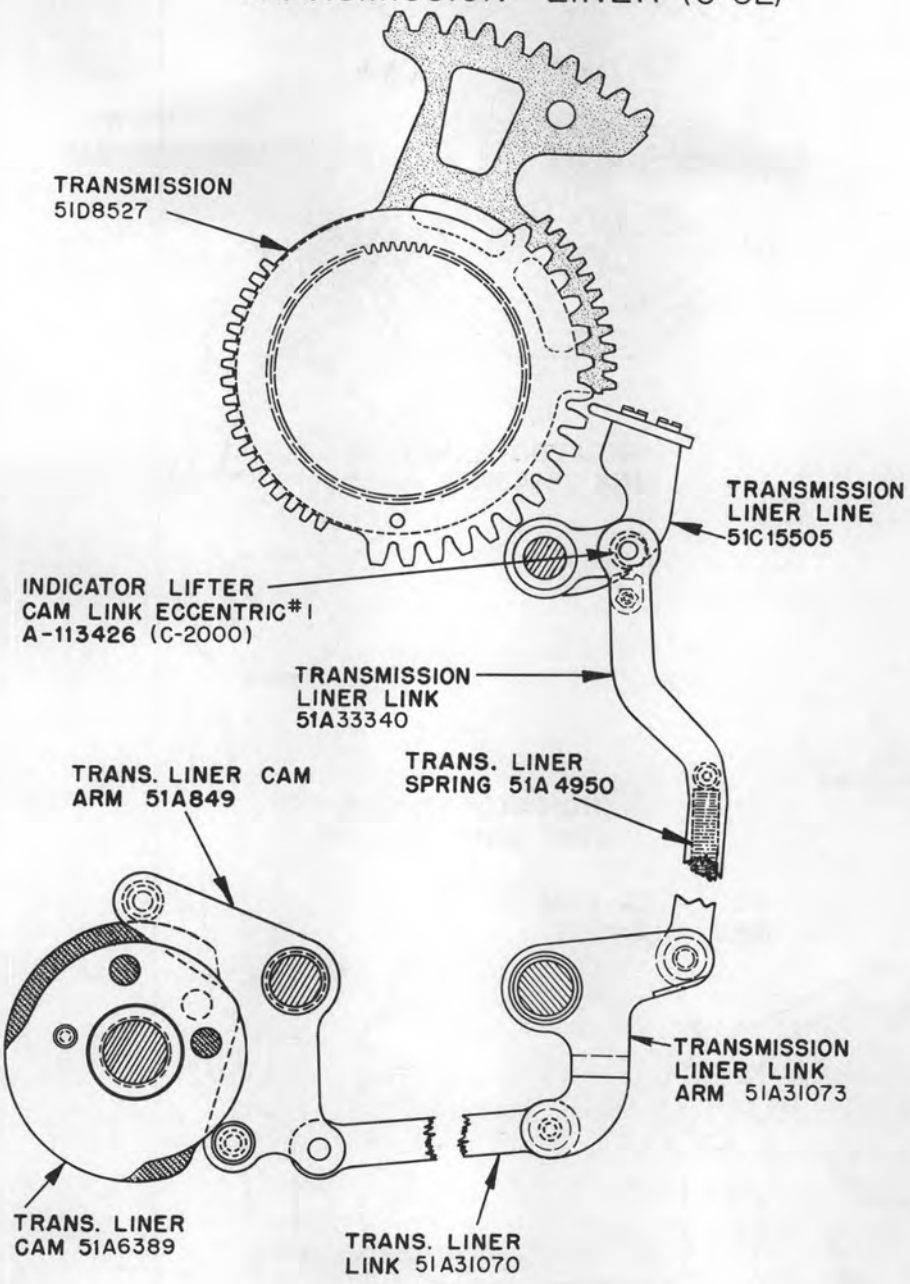
When the Unit Lock Lever is in the "register" or "read Row 2" position, the Restoring Pawl Spring holds the 2 and 11 Segment Stop up in the front. In this position, it acts as an 11 position stop for the Row 1 Differential Segment when Transaction key is out of the register or when an Item Operation is made.

When the Unit Lock Lever is moved to the "Lock Register", "Read Group" "Reset Row 2-" or "Reset Row 2-" position, the Control Line Arm will cam the 2 and 11 Segment Stop down in the path of the back end of the Differential Segment stopping it in the zero position.

On the above operation, the Total key in Row 1 or the Row 2 keys are being used and the Change Balance-Due key is locked out. It is necessary, therefore, that the Row 1 Differential Segment be stopped in the zero position to prevent the Unit Lock Lever from being locked up.

Whenever the Grocery Motor bar is used in the "Reset Row 2 +" position, the Control Detent is moved down and the hook shaped arm is moved down over the stud in the Row 1 Zero Stop holding it to the front. Alsi, whenever the Total key in Row 1 is used in the "Read Group" position of the Unit Lock Lever, the key pin moves the Control Detent down to hold the Row 1 Zero Stop.

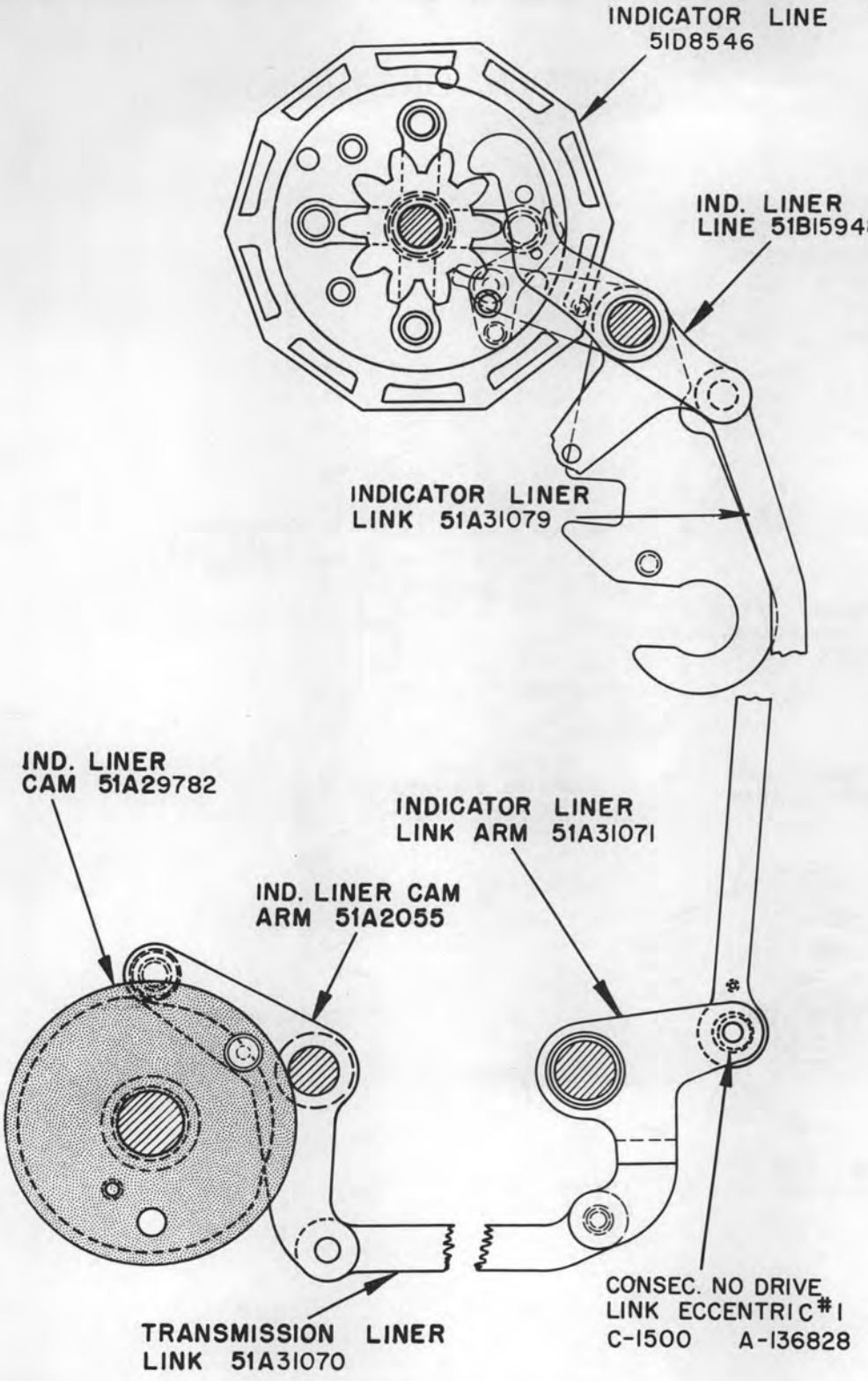
TRANSMISSION LINER (C-52)



ADJUSTMENTS

Transmission Liner

Adjust the Indicator Cam Line Eccentric No. 1 A113426 so that the Transmission Liner will be carried into the straight portion of the teeth of the Indicator Segment when the Liner is in mesh. At the home position, the Liner should be held a safe distance away from the teeth.



Indicator Liner

In the home position, the Indicator Liner should be bottomed in the Indicator Pinion. The Liner should move safety out of the pinions at 1/8 turn of the handle.

The Consecutive Number Drive Link Eccentric No. 1 A136828 is used for this adjustment.

SECTION "G"

COUNTERS

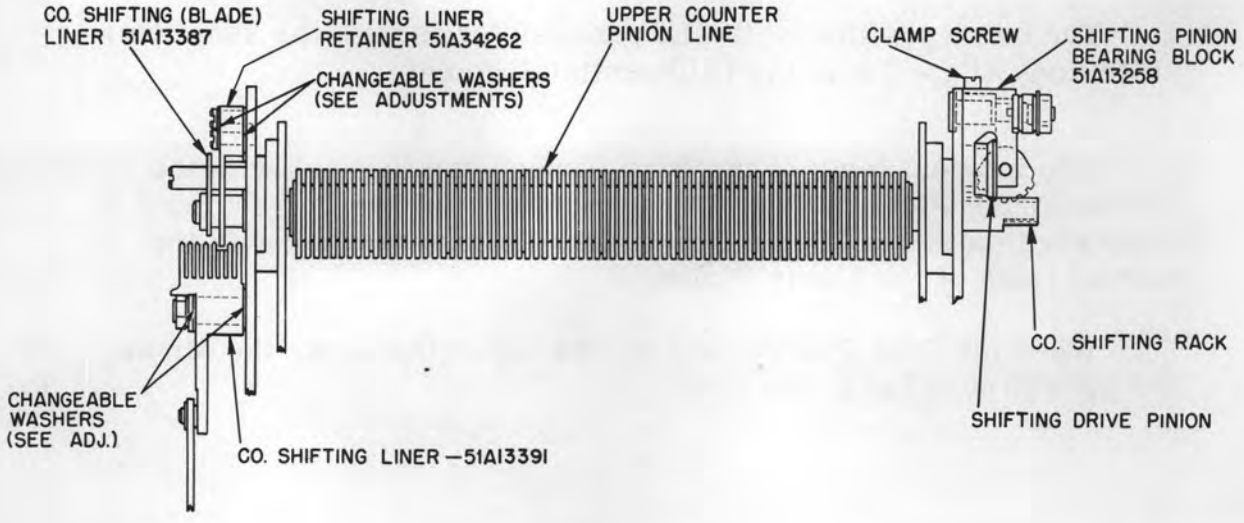
Upper Counter

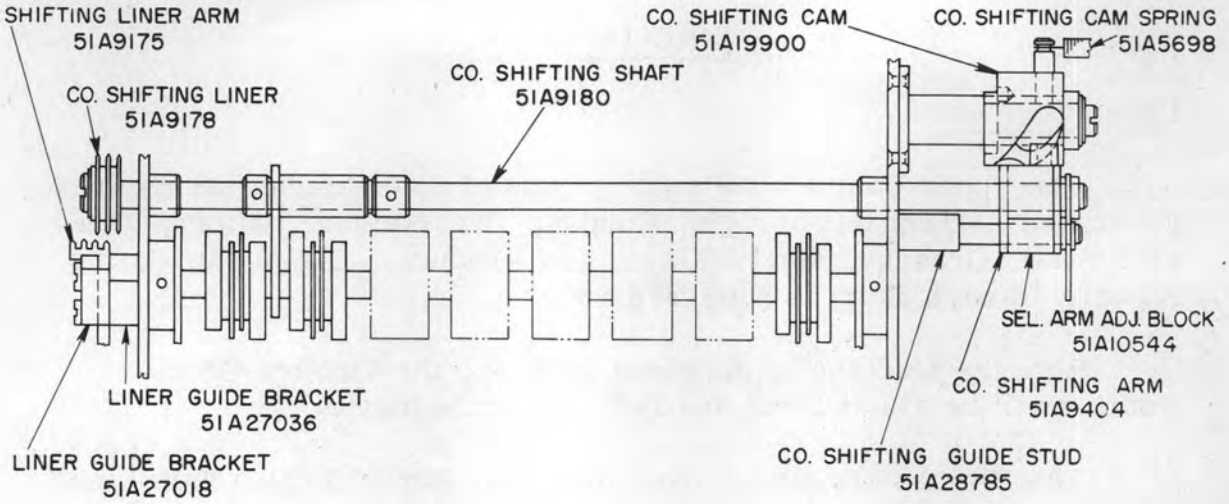
The Upper Counter has eight groups of nine-Pinions each. These Pinions are, from left to right, Coupon, Tax, Refund, Bakery, Taxable Total, Grocery, Meat, Misc., and Produce. The accumulating capacity of each Total is $999,999.99.

With the Machine in the home position, the Taxable Group Pinions will be aligned with the Differential Segments.

The Pinions are guided over the Liner Bar 51C659. This Liner has slots cut to allow the Pinions to turn that are in mesh with the Differential Segments. When the Counter is out of mesh, the Pinions that are aligned with the Differential Segments are prevented from turning by the Counter Pinion Liners.

UPPER COUNTER
(C-52)





Lower Counter

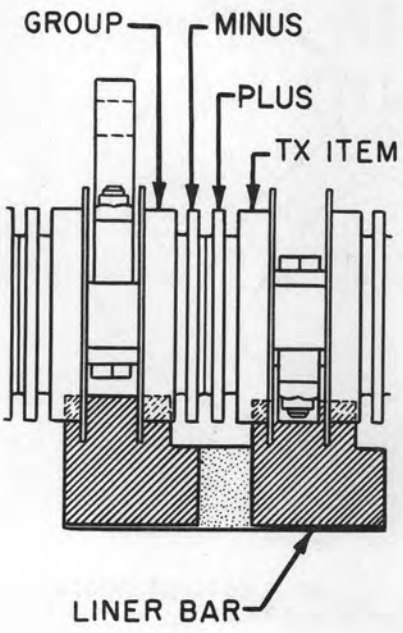
The Lower Counter has eight groups of four Pinions each which are, from left to right, Group, Minus, Plus and Tax Itemizer.

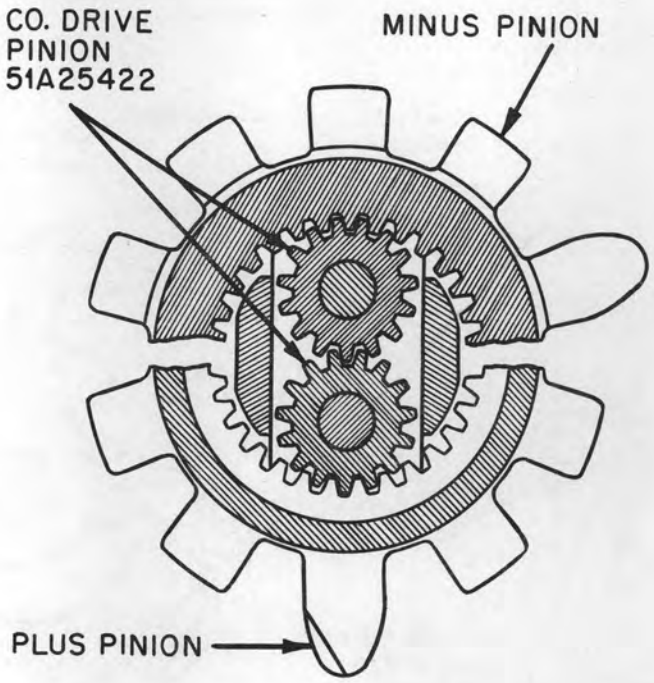
The home position of the Lower Counter is with the Tax Itemizer Pinions aligned with the Differential Segments.

The internal teeth of the Plus Pinions are in mesh with the Counter Drive Pinion 51A25422. The left end of the Drive Pinion meshes with a second Drive Pinion that, in turn meshes with the internal teeth of the Minus Pinion.

When the Plus Pinions are turned top to the back, the Minus Pinions will turn top to the front.

COUNTER



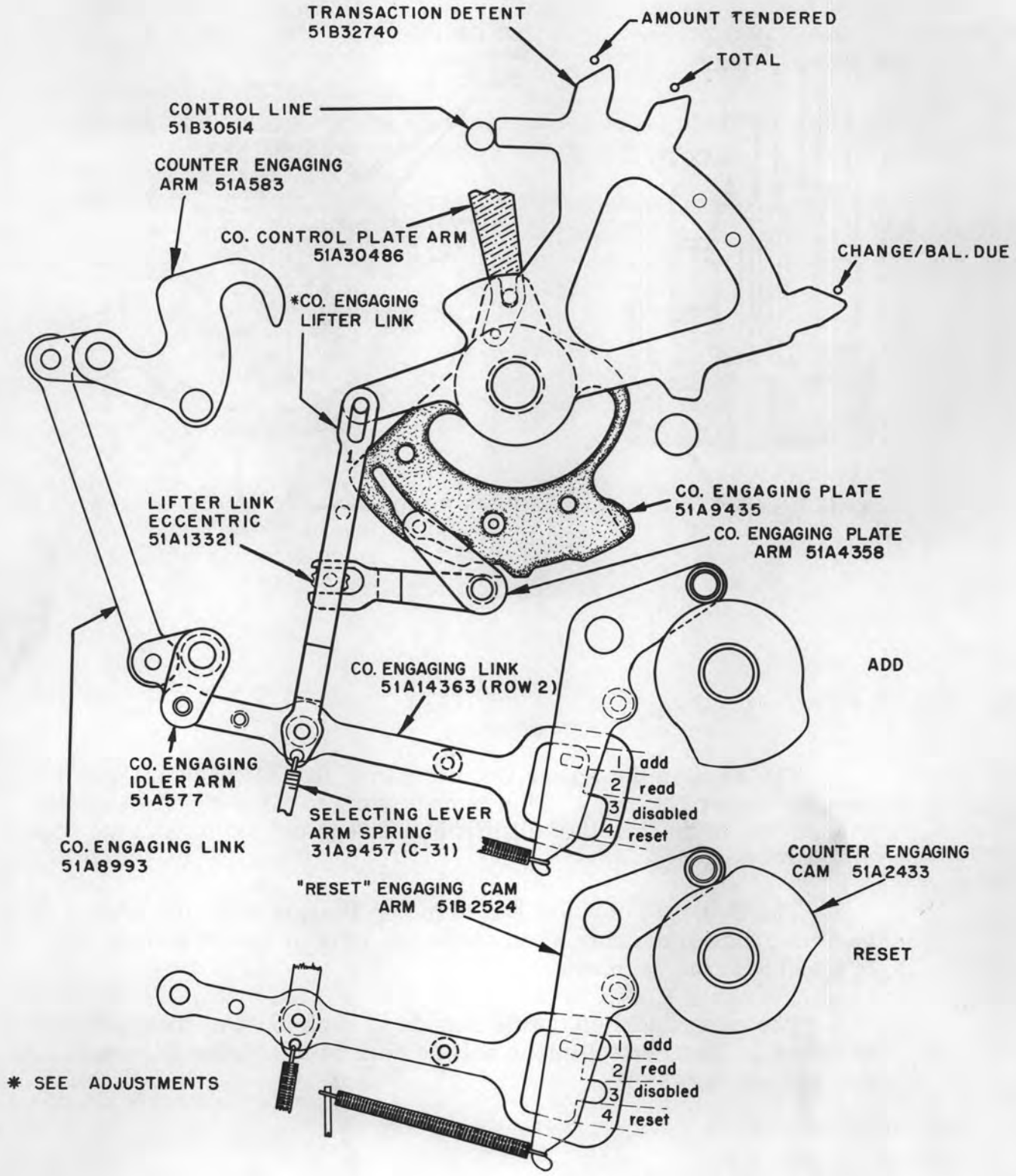


The slots in the Lower Counter Liner Bar 51C9128 are wider than the Upper Counter. This is necessary to allow the Crossfooter Pinion, not in mesh with the Differential Segment, to turn in the opposite direction.

The Group Pinion and Tax Itemizer Pinions are wide enough to be held by the Liner Bar when either the Plus or Minus Pinions are in mesh with the Segments.

The raised portion on the outside of each tooth of these Pinions is to insure that these Pinions will be held by the Pinion Liners as the Transfers restore.

UPPER COUNTER ENGAGING CONTROL
(UNIT LOCK LEVER AND ROW 1)
(C-52)



* SEE ADJUSTMENTS

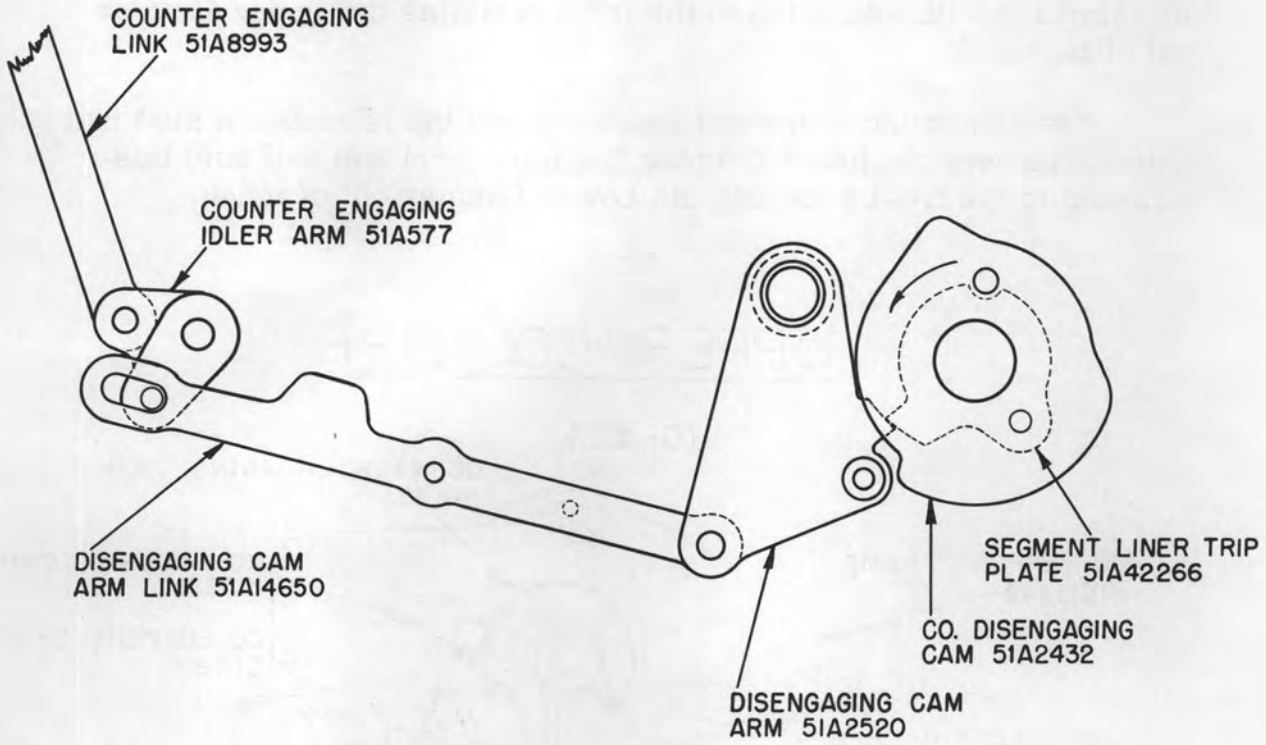
Counter Engaging

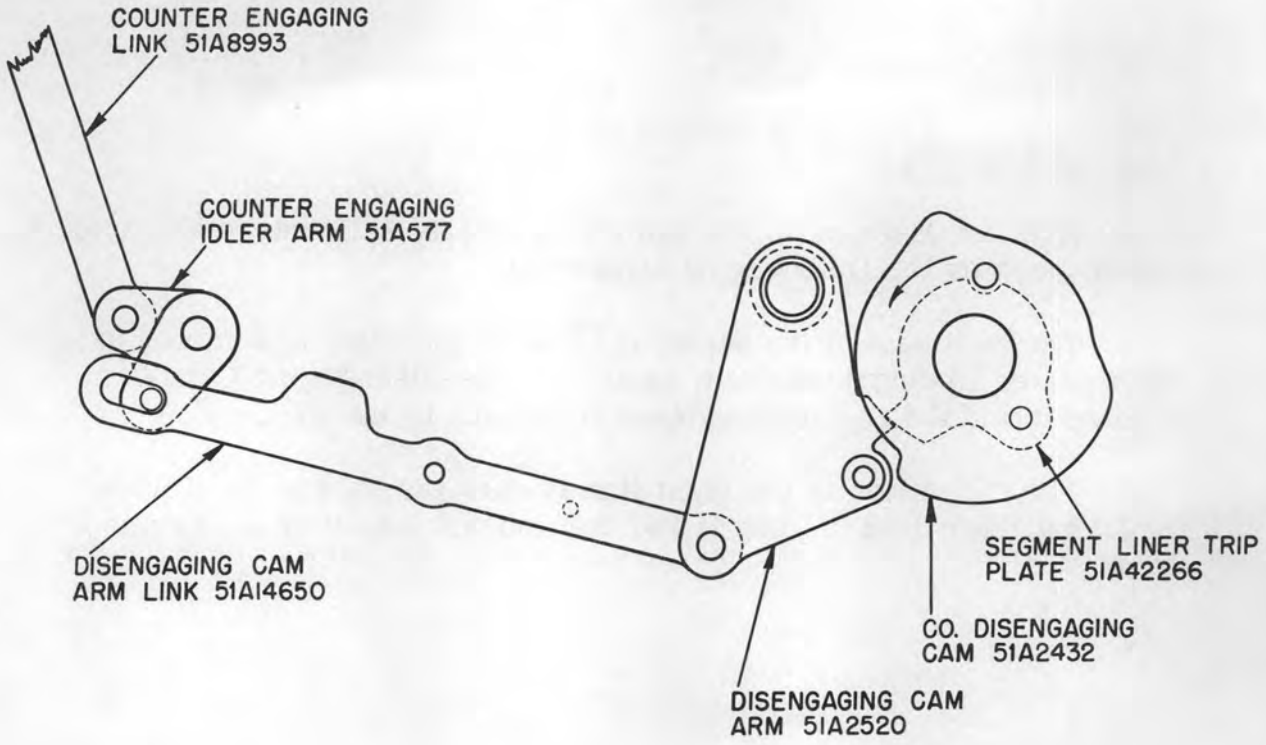
With the Machine in the home position, both Counters are held out of mesh by the Disengaging Mechanism.

The high part of the Segment Liner Trip Plate, assembled to the Counter Disengaging Cam, is against the Disengaging Cam Arm holding it and the Disengaging Cam Arm Link to the back.

The elongation in the right link is over the stud in the Counter Engaging Idler Arm holding it and the Counter Engaging Link up in back.

COUNTER DISENGAGING MECHANISM
(HOME POSITION)
(C-52)


COUNTER ENGAGING LINK 51A8993
COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51A14650
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

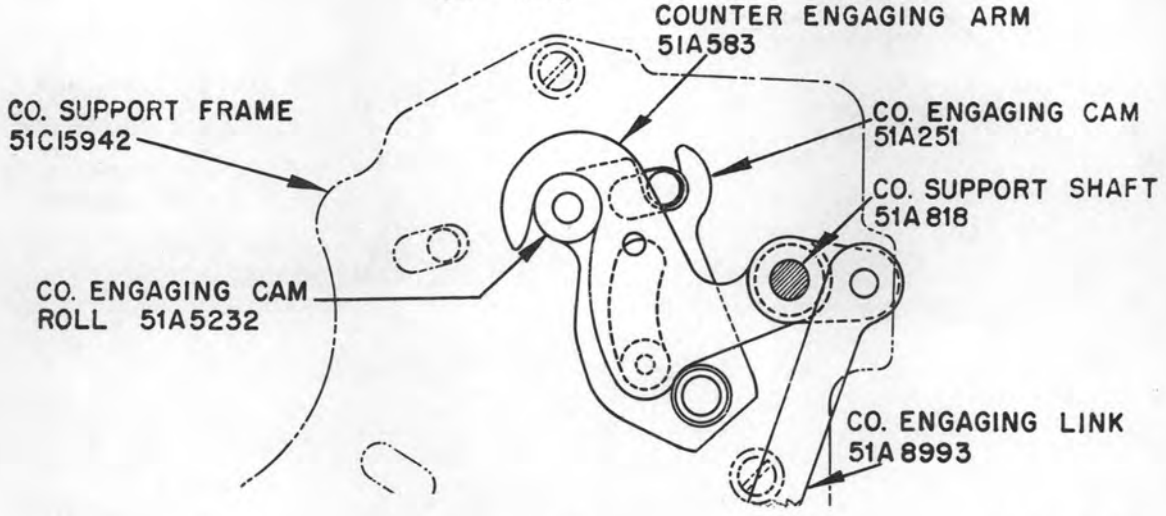


The Counter Engaging Link is connected to the Counter Engaging Arm and will hold it top to the front retaining the Upper Counter out of mesh.

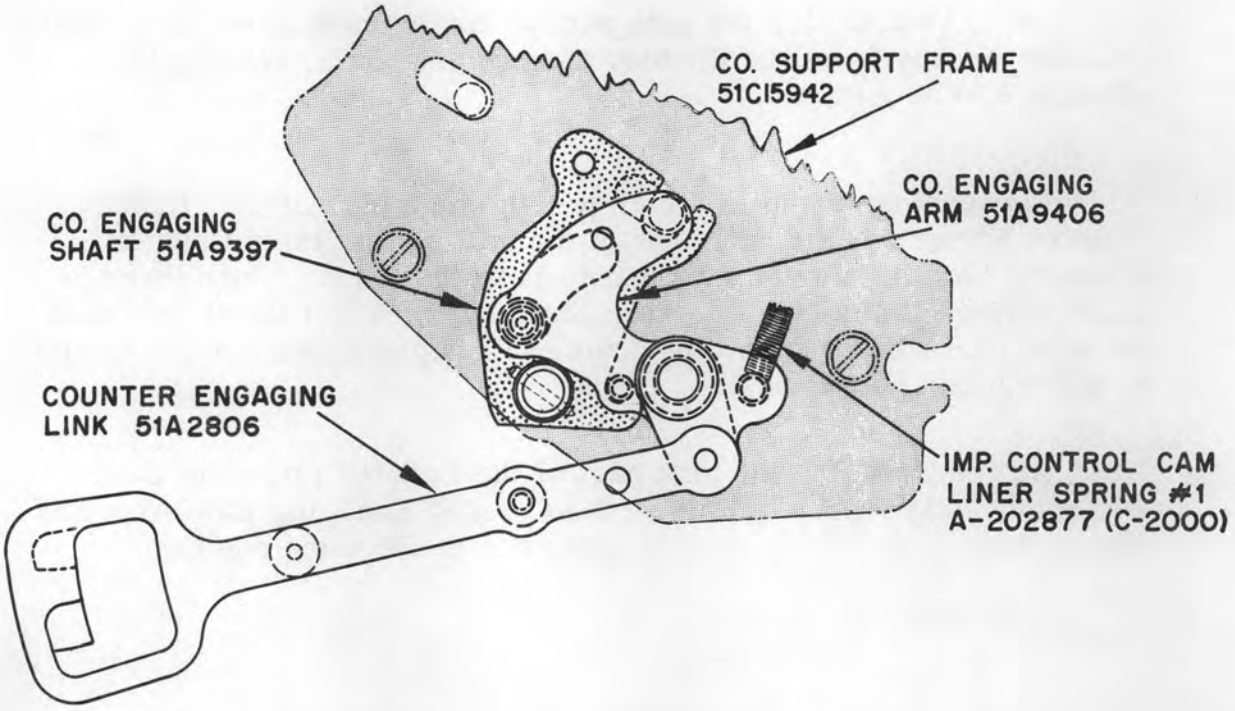
The elongation in the left Disengaging Link is around a stud that extends through the lower Counter Engaging Arm and will hold this Arm top to the front retaining the Lower Counter out of mesh.

UPPER COUNTER

(C-52)



LOWER COUNTER
(C-52)



There is a separate counter Engaging Mechanism for each Counter. This Mechanism consists of four Counter Engaging Links, two for each Counter, and four Counter Engaging Cam Arms.

The two Counter Engaging Links for the Upper Counter are assembled together, as are the two Links for the Lower Counter.

These Links are controlled from rows 1 and 2 and the Unit Lock Lever. By raising the Engaging Links to one of their 4 positions, the Counters are either disabled or selected to engage at 1/8th T.O.H., 3/4 T.O.H. or both 1/8 and 3/4 T.O.H.

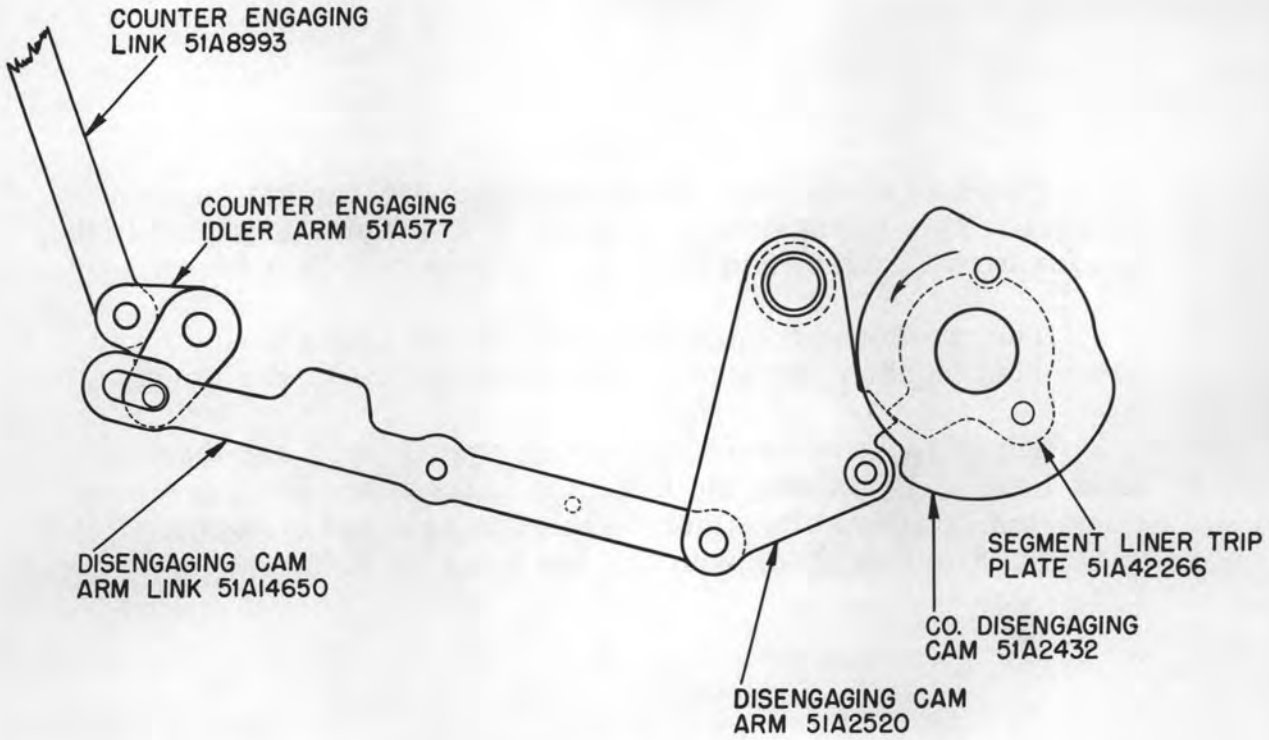
Upper Counter - Item Operation

During an Item Operation, the Upper Counter Engaging Links remain down in the 1st position. In this position, there is a low surface of the right Counter Engaging Link in path of the Stud in the right Counter Engaging Cam Arm. The left Counter Engaging Link has a high surface in path of the left Counter Engaging Cam Arm.

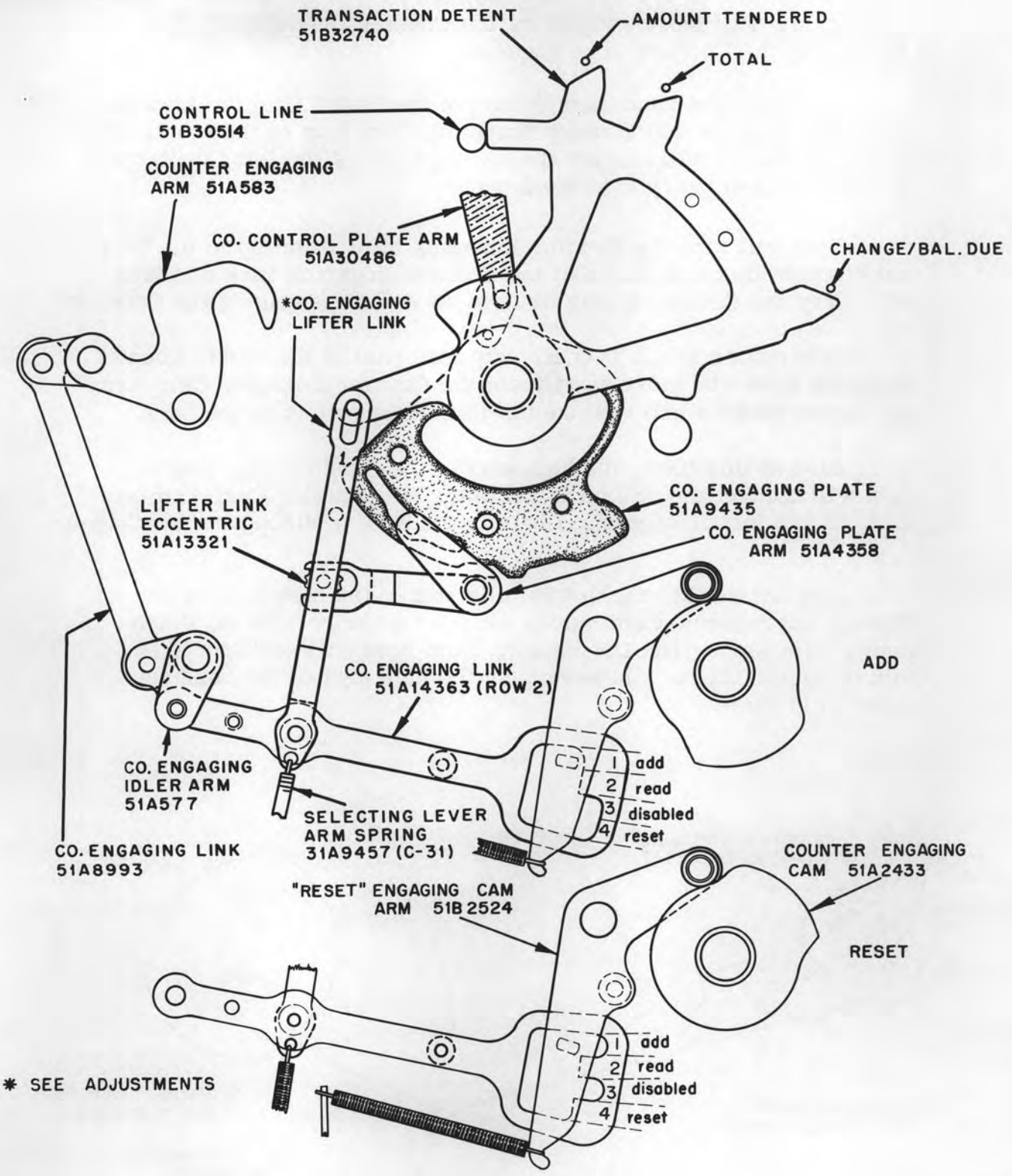
At 1/16 T.O.H., the high part of the Segment Liner Trip Plate will move away from the Counter Disengaging Cam, freeing the Counters to be engaged.

Between home and 1/8 T. O. H., the high part of the "Reset" Counter Engaging Cam will contact the roll on the Reset Counter Engaging Cam Arm and carry it bottom to the front. Since there is a low surface of the right Counter Engaging Link in path of this stud, no movement will be given the Counter Engaging Links and the Counter will remain out of mesh.

At 1/2 T.O.H., the high part of the Counter Engaging Cam will move away from the Roll on the Counter Engaging Cam Arm and spring tension on this arm will restore it to the home position.


COUNTER ENGAGING LINK 51A8993
COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51AI4650
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

UPPER COUNTER ENGAGING CONTROL
(UNIT LOCK LEVER AND ROW 1)
(C-52)



Also, at 1/2 T.O.H., a high part of the Counter Disengaging Cam will contact the roll on the Counter Disengaging Cam Arm and carry it and the Counter Disengaging Links to the back.

From 5/8 to 3/4 T.O.H., the high part of the Counter Disengaging Cam will move away from the Counter Disengaging Cam Arm freeing up the Counter to be engaged.

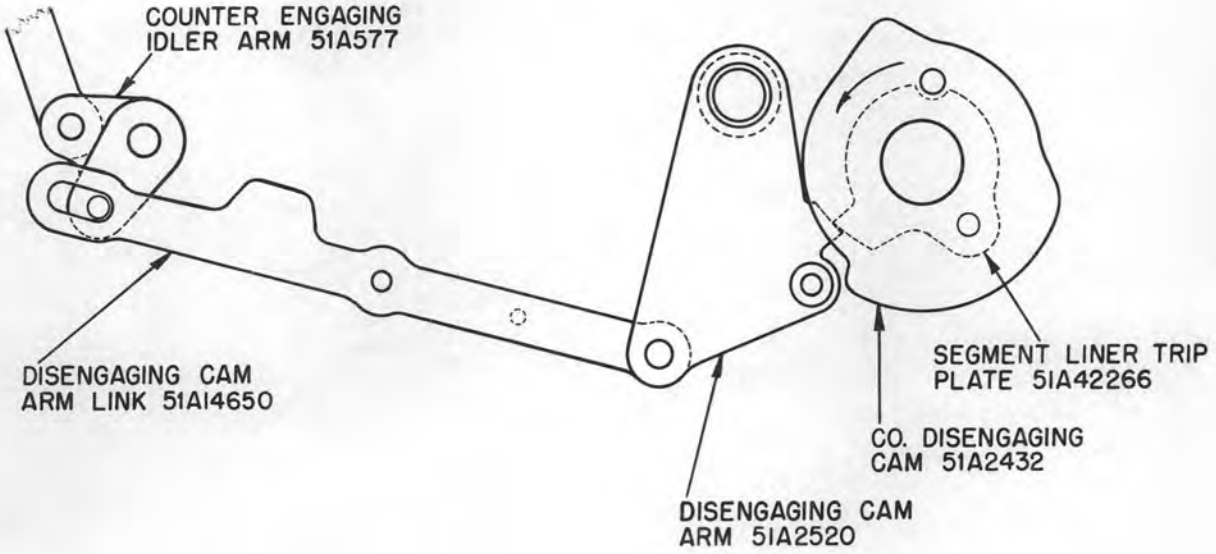
At this same time, a high part of the "Add" Counter Engaging Cam will cam the Add Counter Engaging Cam Arm to the front. The stud in this Arm will contact the high surface of the left Counter Engaging Link and carry it to the front.

This will turn the Counter Engaging Idler Arm top to the back and through the connections of the Counter Engaging Link 51A8993, will carry the Counter Engaging Arm up in front engaging the Counter.

Just before 1-1/4 T.O.H., the high part of the "Add" Counter Engaging Cam will move away from the Counter Engaging Cam Arm and spring tension will restore the Cam Arm bottom to the back.

Also at this time, the high part of the Counter Disengaging Cam will contact the roll on the Counter Disengaging Cam Arm and carry it and the Disengaging Links to the back to disengage the Counter.

Just before the machine is fully home, the high part of the Counter Disengaging Cam moves away from the roll on the Disengaging Cam Arm. The Disengaging Cam Arm will continue to be held bottom to the back however, by the high part of the Segment Liner Trip Plate.

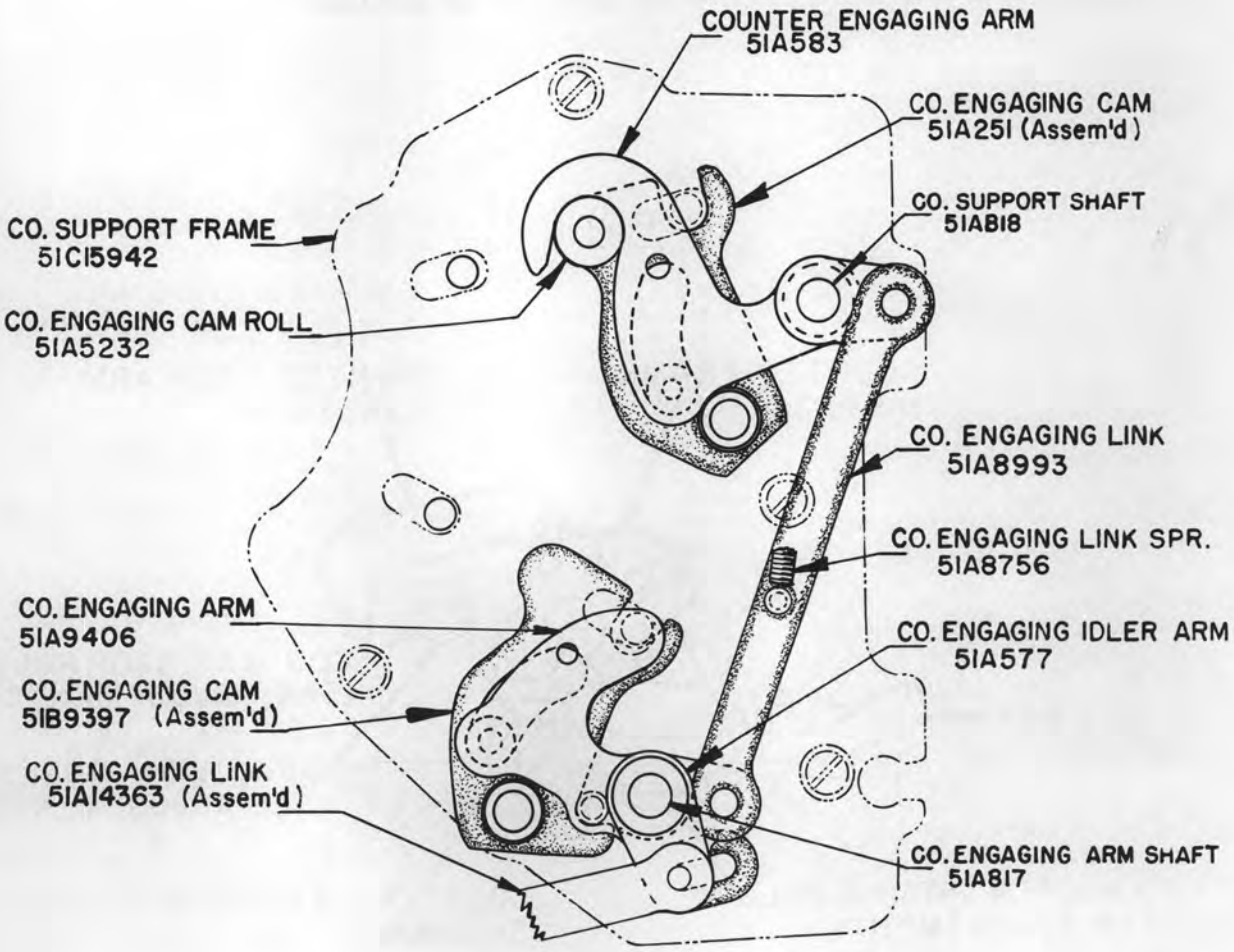

COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51AI4650
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

Engaging

With the Counter Engaging Arm down in front, the "Hook" of the Arm is over the Counter Engaging Cam Roll 51A5232 holding the Counter Engaging Cam and the Counter Engaging Shaft 51A251 top to the back.

The Counter Engaging Cam Shaft Assembly 51A251 consists of the Cam Shaft and two Arms that yoke hubs on each side of the Upper Counter Unit. This arrangement gives even carry to the Upper Counter in and out of mesh.

As the Counter Engaging Arm is moved up in front, the roll in the Arm will ride up the raceway of the Cam. As soon as the "hook" in the Arm is away from the Counter Engaging Cam Roll, the roll in the Arm will move the Cam Arm top to the front, moving the Counter to the front to engage the Segments.



When the Counter is fully in mesh, the Counter Stop Arms 51A8974 (left) and 51A8972 (right) will come against the Counter Stop Rolls, stopping the Counter to prevent meshing too deep with the Segments.

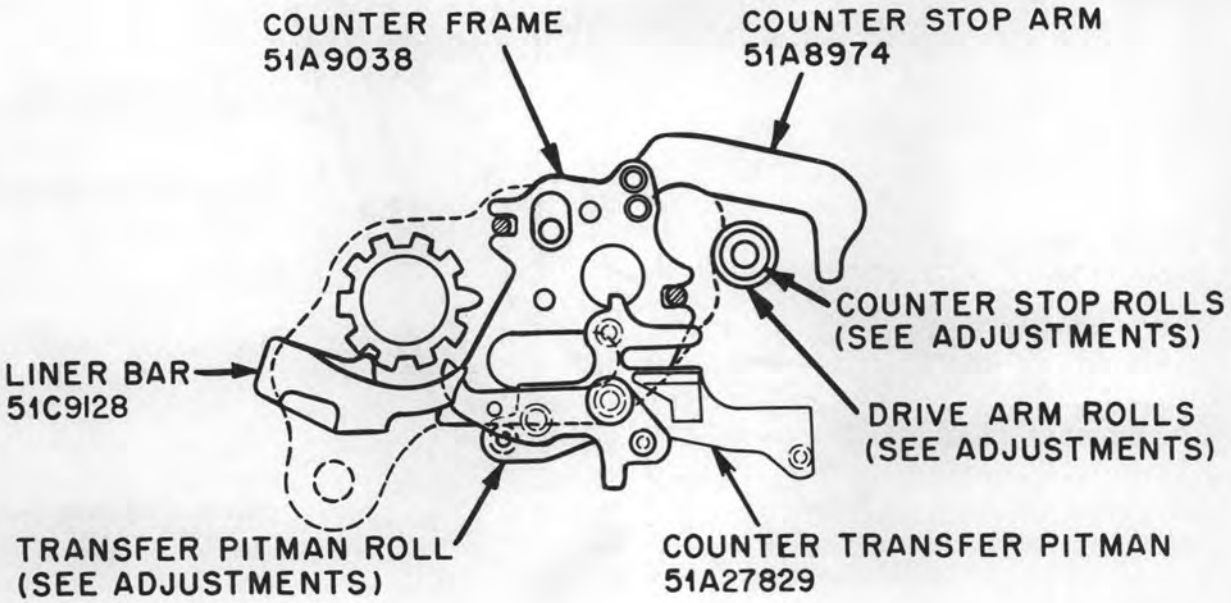
The roll on the Counter Engaging Arm 51A583 will then move into the neutral part of the raceway in the Counter Engaging Cam.

As the Counter Engaging Arm moves down to disengage the Counter, the roll on the arm moves into the working part of the raceway, in the Counter Engaging Arm, moving the cam top to the back to disengage the Counter.

When the Counter is out of mesh, the Counter frame will come against the Counter Stop rolls. This stops the Counter and holds it in position so the Transfers will restore.

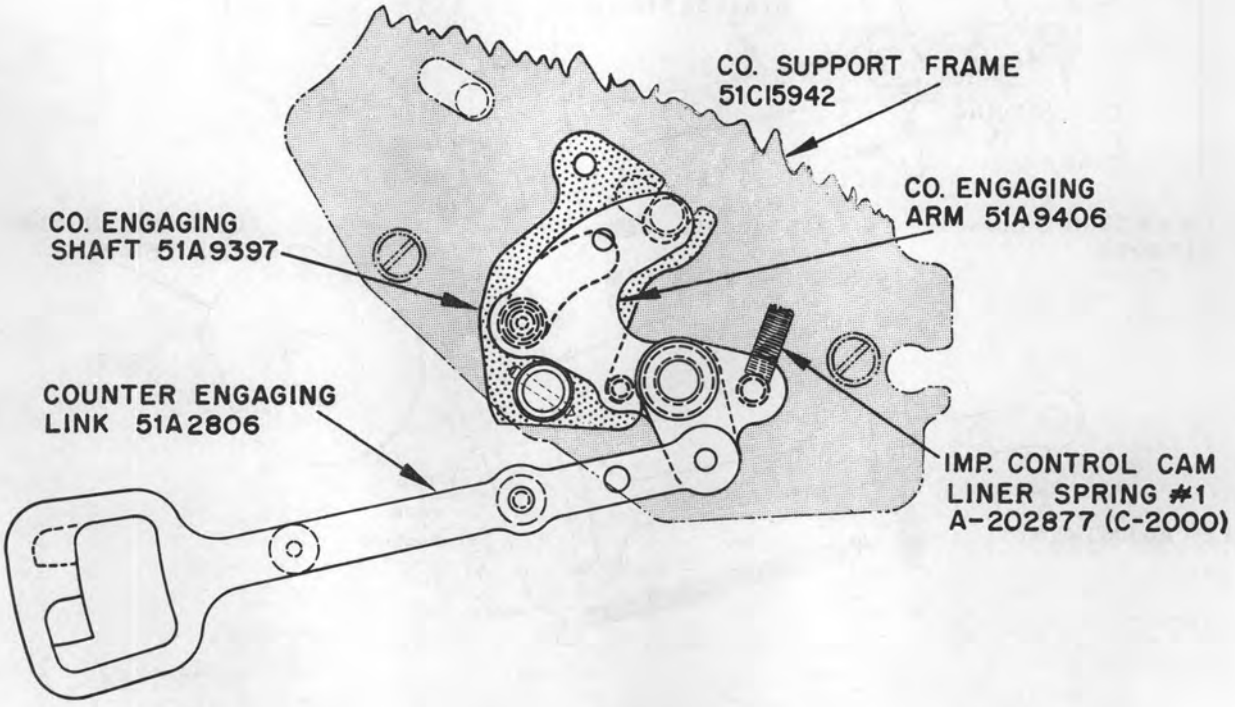
As the hook on the Counter Engaging Arm moves over the Counter Engaging Cam roll, the roll in the Counter Engaging Arm moves into a neutral part of the raceway in the Cam.

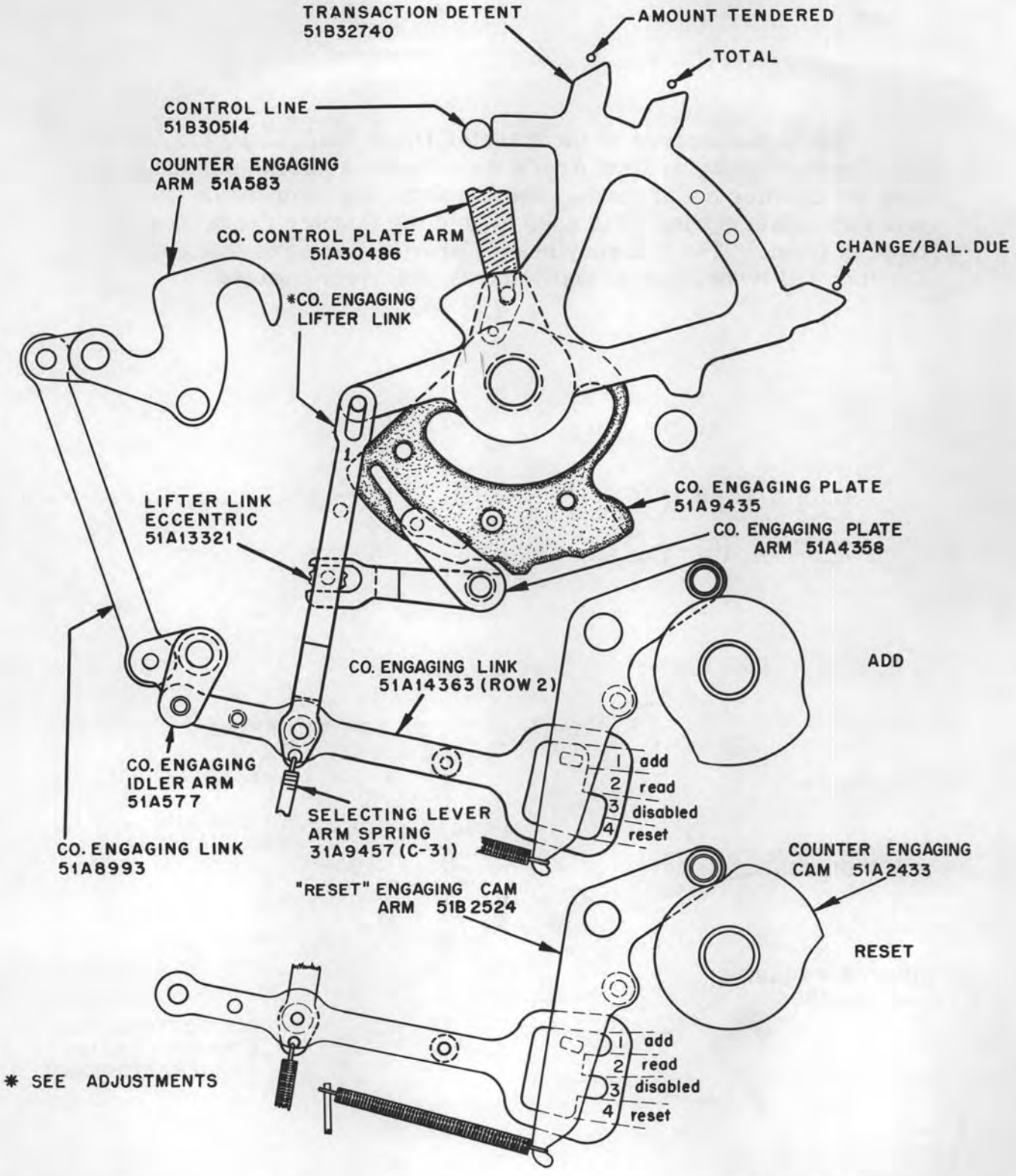
(C-52)



Due to the location of the transfer Drive Shaft Line, the Lower Counter Engaging Cam Arm does not have a "hook" portion to lock the Counter out of mesh. On this arm, the impression Control Cam Liner Spring #1 is used to hold the Counter Engaging Arm down in front. This is a very heavy spring and insures that the Counter will be held out of mesh unless positively engaged.

LOWER COUNTER
(C-52)





When the Amount Tendered, Total or Change Balance Due Key is used, the Upper Counter will be disabled.

As one of these keys is pressed, the key pin will contact the camming surface of the transaction detent 51B32740 and cam it down in front. The back of the detent will move up and being connected to the Counter Engaging Lifter Link will raise it.

The Lifter Link is connected at the bottom to the Counter Engaging Links (Upper Counter) and will raise these links to the 3rd position.

In this position, both links have low surfaces in path of the studs on the Counter Engaging Cam Arms and the Upper Counter will not be engaged on this operation.

Unit Lock Lever

When the Unit Lock Lever is moved to read row 2, the control line will be turned top to the front. The Counter Control Plate Arm is pinned to this line and will be carried bottom to the back.

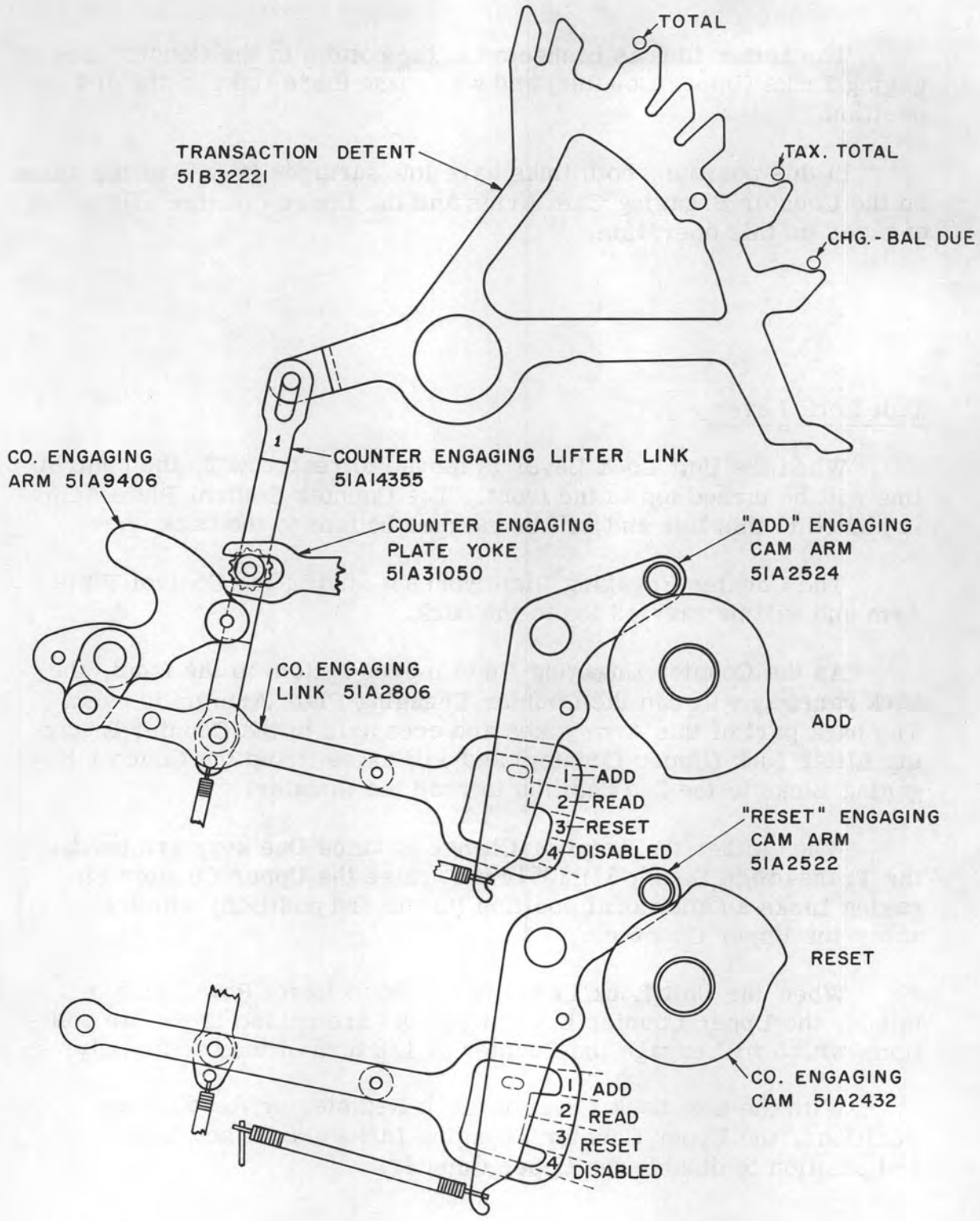
The Counter Engaging Plate yokes a stud in the Control Plate Arm and will be carried top to the back.

As the Counter Engaging Plate moves bottom to the front, the back raceway will can the Counter Engaging Plate Arm up in back. The back part of this Arm yokes and eccentric in the Counter Engaging Lifter Link (Upper Counter) and will raise it and the Counter Engaging Links to the 2nd position to read the Counter.

When either the Total or Change Balance Due keys are used, the Transaction Detent 51B30514 will raise the Upper Counter Engaging Links an additional position (to the 3rd position) which disables the Upper Counter.

When the Unit Lock Lever is moved to Reset Row 2 plus or minus, the Upper Counter Engaging Links are raised to the 4th position, which will engage the Counter at 1/8 turn of the handle only.

With the unit Lock Lever in Lock Register or Read Group Positions, the Upper Counter Engaging Links are raised to the 3rd position to disable the Upper Counter.



Lower Counter - Item Operation

On an Item Operation, the Lower Counter Engaging Links remain down in the 1st position.

From home to 1/8 T.O.H., the Disengaging Mechanism moves to the front. At 1/8 T.O.H., the "Reset" Engaging Cam Arm will move to the front. Its stud will enter the cut-out part of the Counter Engaging Link giving no movement to engage the Counter.

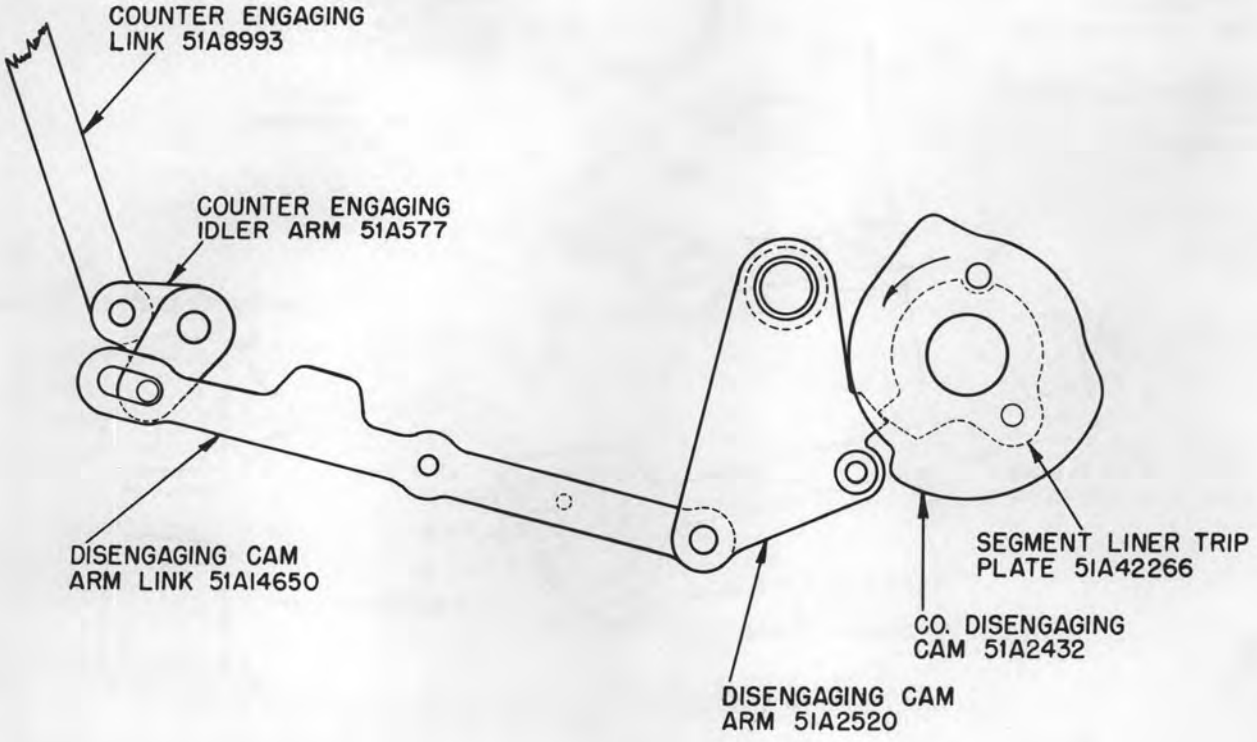
At 1/2 T.O.H., the Engaging Cam Arm is moved to the back by spring tension. At the same time, the Disengaging Mechanism will move back locking the Counters out of mesh.

The Disengaging Mechanism moves to the front again at 3/4 T.O.H.

At this same time, the "Add" Engaging Arm will be carried to the front and its stud will contact the high surface of the Counter Engaging Link carrying it to the front to engage the Counter.

The Counter is disengaged at 1-1/8 T.O.H. as the Disengaging Mechanism moves to the back.

When either the Total or Taxable Total keys are used, the Lower Counter Engaging Links will be raised to the second position to read the Lower Counter. The Total Key reads the main Itemizer and the Taxable Total key resets the Taxable Itemizer and adds this amount into the Plus Pinions of the main itemizer.


COUNTER ENGAGING LINK 51A8993
COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51A14650
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

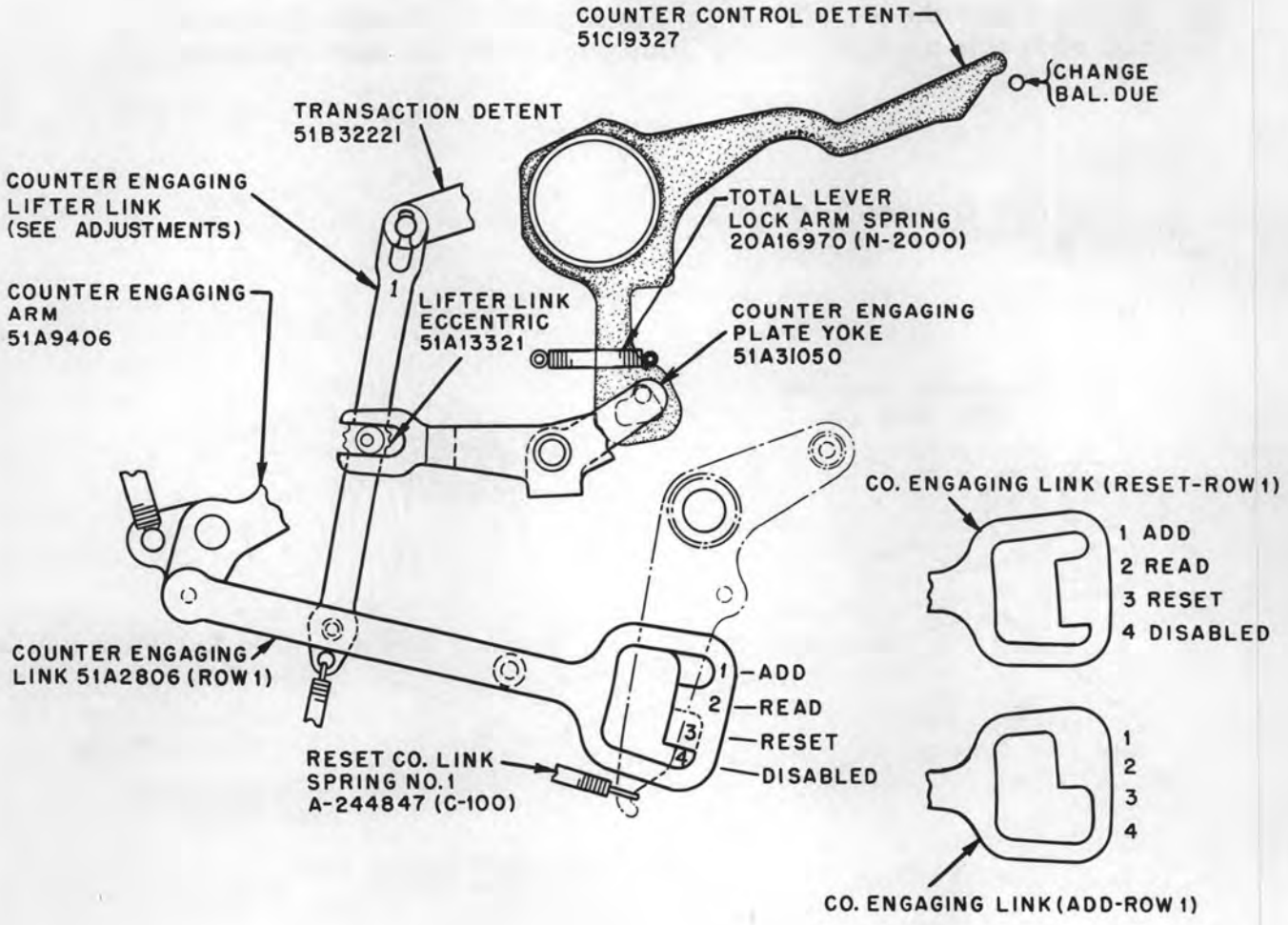
As the Total or Taxable Total keys are pressed, their key pins will contact the camming surface of the Transaction Detent 51B32221 and carry it down in front. The back of this Detent will move up and being connected to the Counter Engaging Lifter Link (Lower Counter) will carry it up also.

The Lifter Link is connected to the Counter Engaging Links, (lower Counter) and will raise them to the second position.

When the Change Balance Due key is used, the main Itemizer is reset.

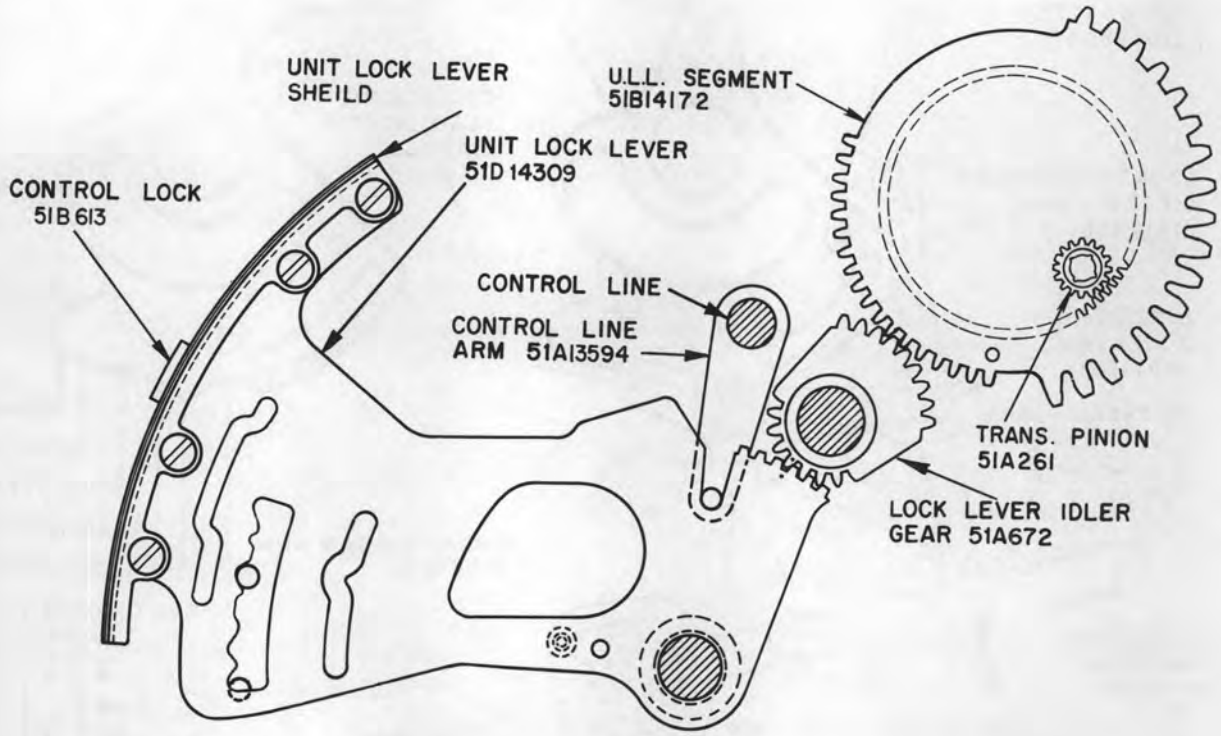
As the Change Balance Due key is pressed, the key pin will contact the Lower Camming Surface of the Transaction Detent 51B32221 camming it down. The back of the Detent will be moved up and through the Counter Engaging Lifter Link, raise the Lower Counter Engaging Links one position.

COUNTER ENGAGING CONTROL-CHANGE/BALANCE DUE KEY (LOWER COUNTER) (C-52)



Also, as the key is pressed, the key pin will contact the Counter Control Detent and move it up. The raceway in the bottom of this Detent will move the Counter Engaging Plate yoke down in front. The back end of the Counter Engaging Plate Yoke, yokes uneccentric in the Counter Engaging Lifter Link (Lower Counter) and will raise it and the Counter Engaging Links an additional position to the 3rd position.

The Lower Counter will now be engaged at 1/8 T.O.H. only, which will reset the main Itemizer.

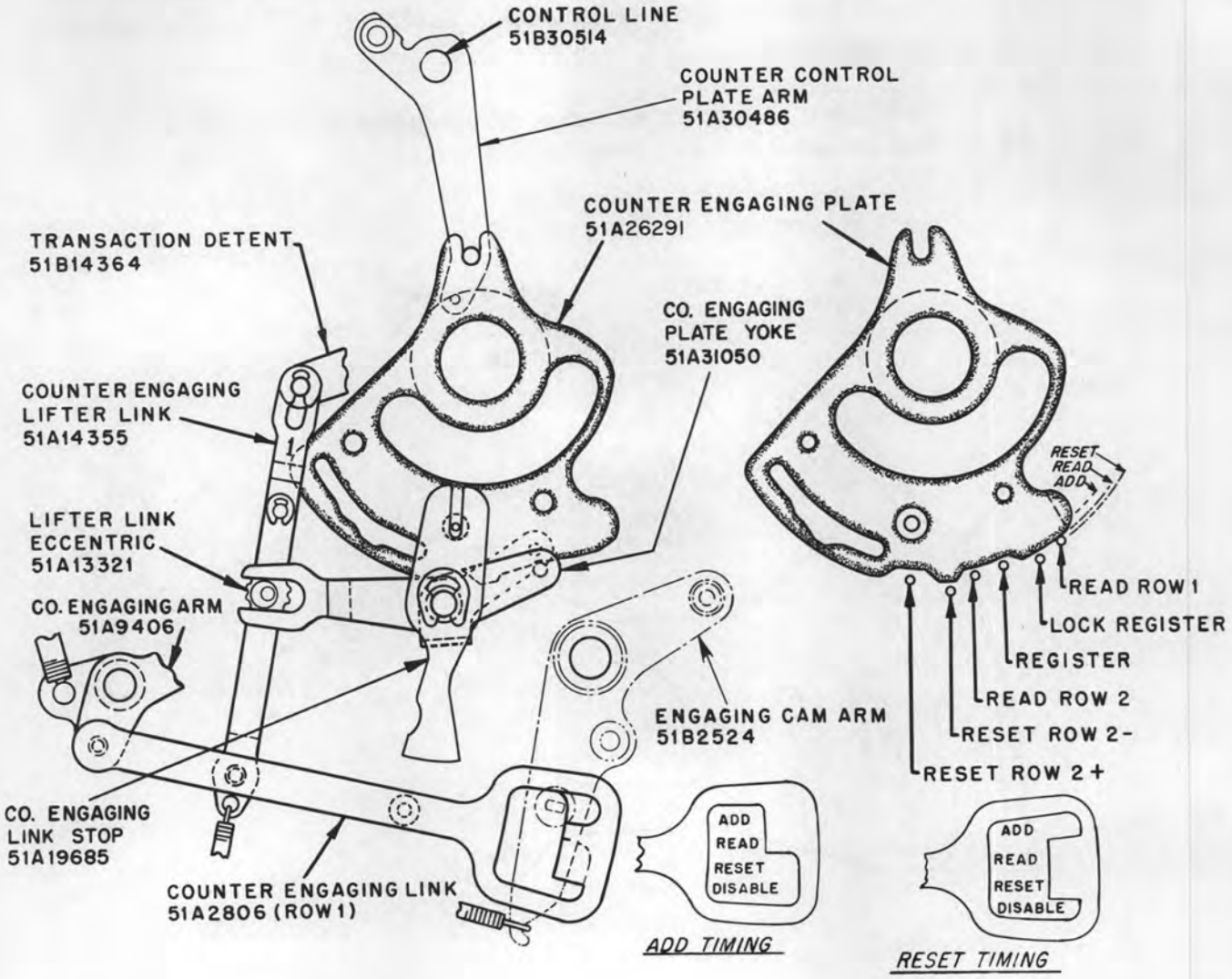


Unit Lock Lever Control

When the Unit Lock Lever is moved to the Read Row 2 position, no movement is given the Lower Counter Engaging Links. In this position, Lower Counter Engaging is controlled in exactly the same manner as in Register position. This enables the main Itemizer position to be used as a collective group total.

The totals that are read in the Upper Counter are added into the Main Itemizer at 3/4 T.O.H.

COUNTER ENGAGING CONTROL-UNIT LOCK LEVER (LOWER COUNTER)



The total key will read the main Itemizer and the Change Balance Due Key will reset the Main Itemizer.

The Refund and Coupon Key should be used after the Total Key, since these two keys subtract from the crossfooter, leaving a net total.

The Taxable Group Key should be used after the Change Balance Due key. The total of this key represents all Taxable items of the day's business and is used only to check against the Tax Total.

With the Unit Lock Lever in Reset Row 2 minus, the Lower Counter Engaging Links are raised to the 4th position to disable Counter Engaging.

In Reset Row 2 plus, the Lower Counter Engaging Links are lowered to the number 1 position to add amounts cleared from the Upper Counter into the Group Total.

With the Unit Lock Lever in Lock Register or Read Group Position, the Lower Counter Engaging Links are raised to the 2nd position which will engage the counter on read timing.

The Counter Engaging Link Stop 51A19685 is swung on the Counter Control Arm stud, in the right side frame, and yokes the Counter Engaging Plate Stud. With the Unit Lock Lever in Register or Read Row 2 Position, the bottom surface of the Link Stop will be positioned over the Stud in the Counter Engaging Link for the Lower Counter. This prevents an overthrow to the Counter Engaging Links when the Change Balance Due Key is used.

With the Unit Lock Lever in any position other than Register or Read Row 2, the Link Stop will be held out of the path of the stud in the Counter Engaging Link.

ADJUSTMENTS

Engaging Cam Arms

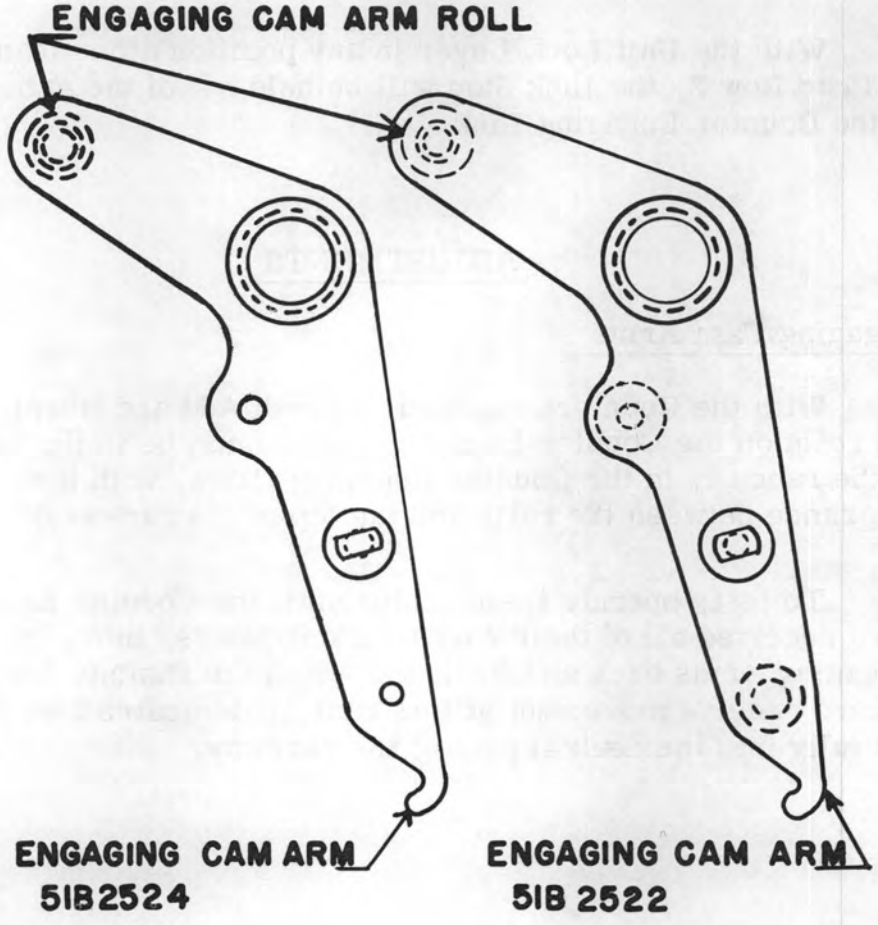
With the Counters engaged, on both Add and Reset Timing, the rolls on the Counter Engaging Arms must be in the neutral part of the raceway in the Counter Engaging Cams, with less than .050 clearance between the rolls and the top of the raceways.

To test, operate the machine until the Counter Engaging Arms have received all of their carry. Using pliers, move the Counter Engaging Arms back and forth and watch the Pinions Liners. If the Liners receive movement at this time, it indicates that the rolls are not fully into the neutral part of the raceway.

To adjust for this condition, change the rolls on the Counter Engaging Cam Arms 51B2524 and 51B2522.

The Available rolls are listed below:

51A8210	Engaging Cam Arm Roll	.370
51A8209	Engaging Cam Arm Roll	.390
51A8210	Engaging Cam Arm Roll	.360
51A8211	Engaging Cam Arm Roll	.380
51A8320	Engaging Cam Arm Roll	.350



DEPTH OF MESH

After installing the proper size rolls on the engaging Cam Arms, adjust for depth of mesh.

Lower Counter

With 9's on the Main Itemizer, remove the "in" Stop Rolls and key banks. Make a Total operation until the Differential Segments are fully up the bank. (Stop before Clutch Pinions engage Differential Segments).

Move the Segments up and down. There should be no (boney) action and the long teeth should not "nip" the Pinion Liners.

If (boney) action occurs, the Counter is meshing too deep.

To adjust, use the new Counter Engaging Arm listed below.

51A38567	Counter Engaging Arm

If the Counter is not engaging deep enough, (long tooth tripping on Pinion Liner), the Counter Engaging Arm may be peened between the roll and hub of the arm.

Upper Counter

To test the Upper Counter, add all 9's to the Bakery Total and move the Unit Lock Lever to Read Row 2. Trip Machine with the Bakery Key and operate until Differential Segments are fully up the bank but Clutch Pinions not engaged.

Make same test as on lower Counter.

To adjust for meshing too deep, use the Roll listed below which is smaller than the Standard roll installed in Assembly.

51A36054	Engaging Arm Roll	.3688

To obtain deeper mesh, use one of the Counter Engaging Arms listed below. The roll on these Arms is located further from center than on the standard Engaging Arm 51A583.

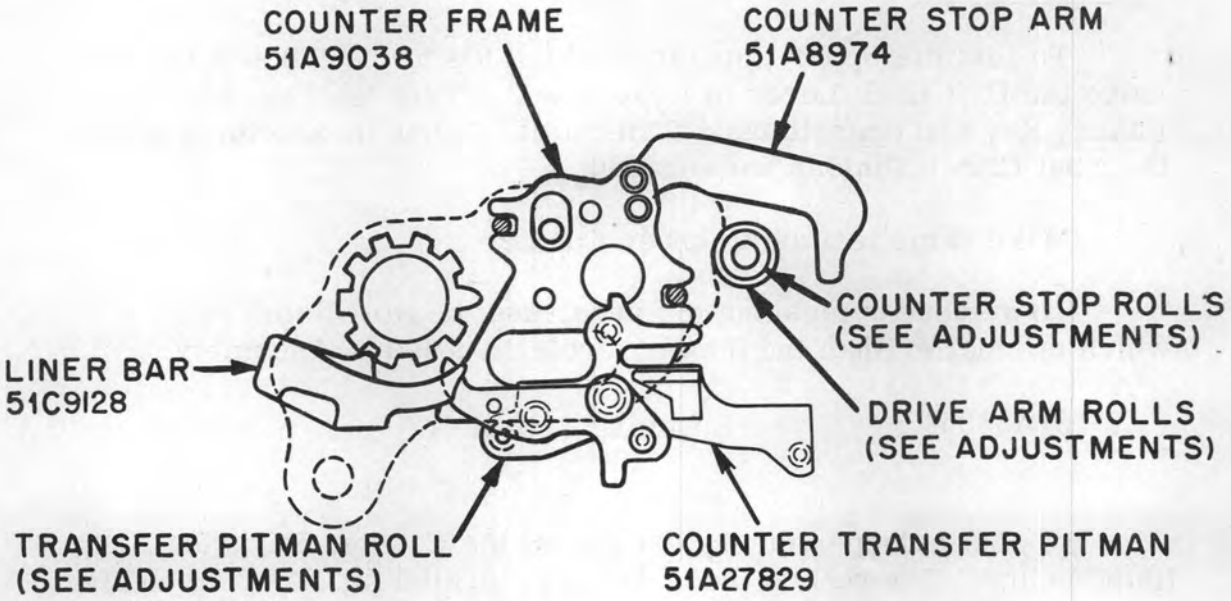
51A36793	Counter Engaging Arm
51A38566	Counter Engaging Arm

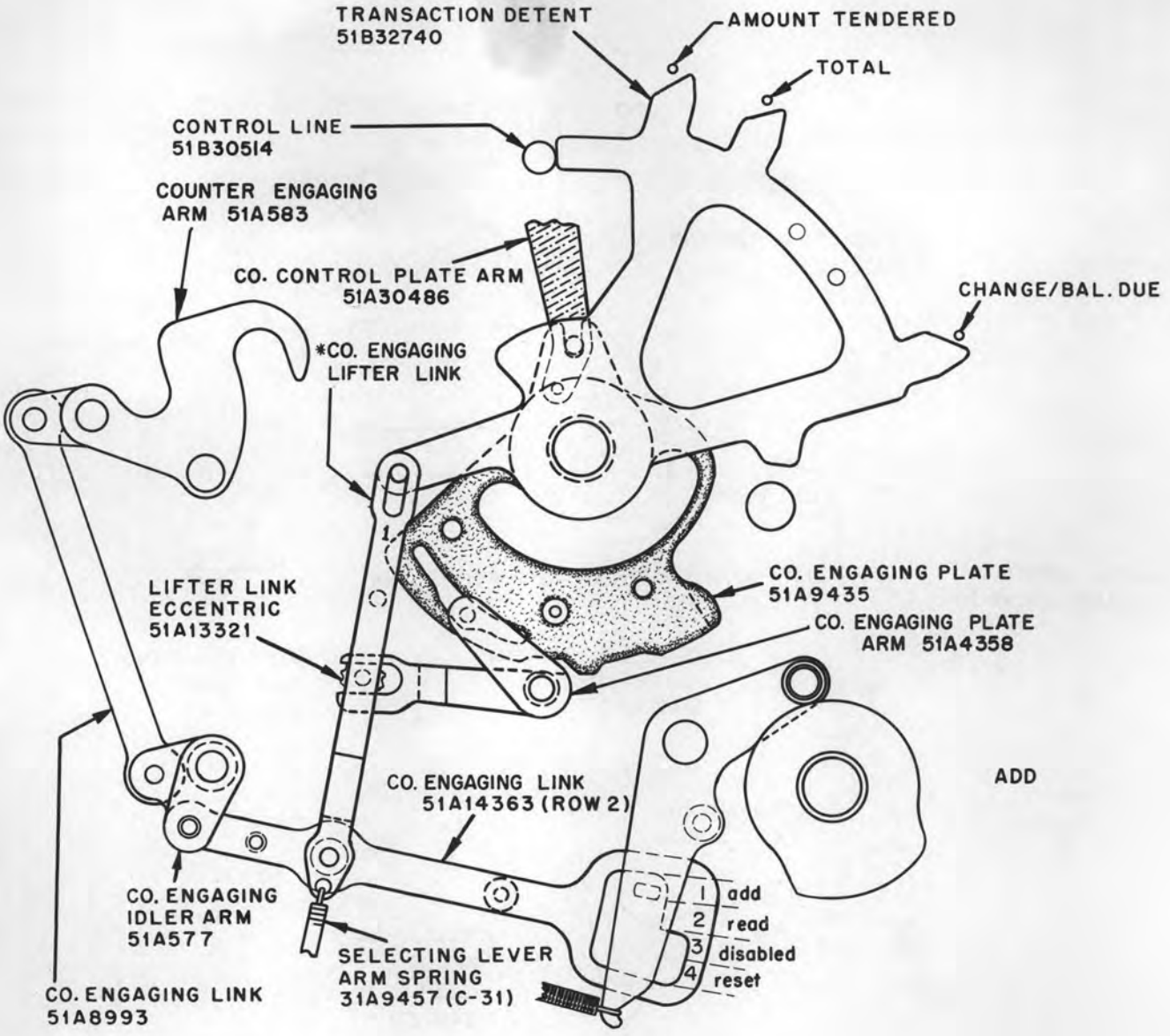
After depth of mesh has been adjusted properly "in" stop rolls should be used that will turn by finger pressure with the Counters engaged.

The available rolls for this adjustment are listed below.

51A9567	Counter Stop Roll	.335
51A9568	Counter Stop Roll	.340
51A9569	Counter Stop Roll	.345
51A9346	Counter Stop Roll	.330
51A10092	Counter Stop Roll	.350
51A11825	Counter Stop Roll	.355
51A18539	Counter Stop Roll	.324
51A34212	Counter Stop Roll	.361

(C-52)



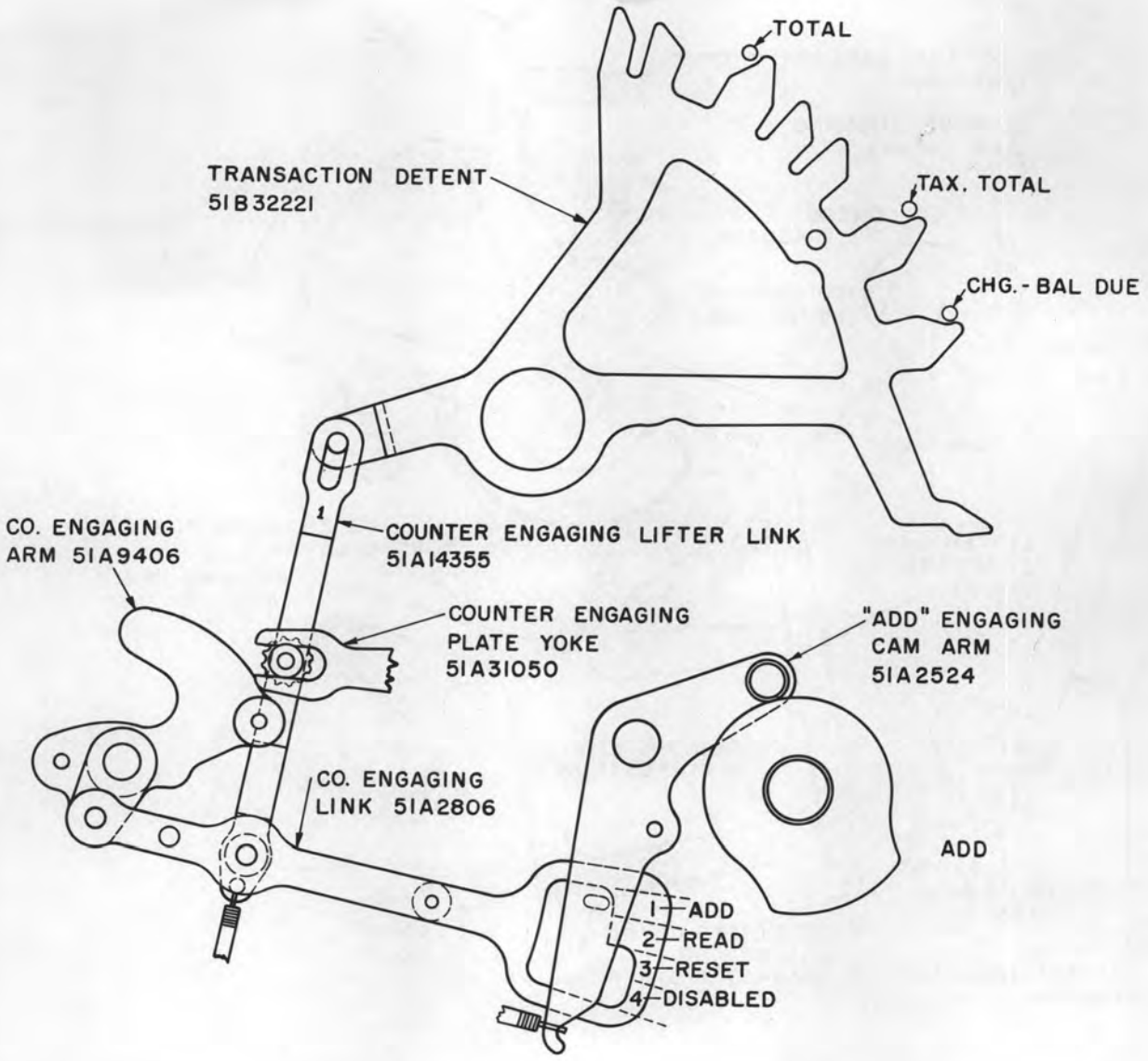


Counter Engaging Lifter Links (Upper Counter)

Use the Engaging Lifter Links listed below to adjust the Counter Engaging Links when the Amount Tendered, Total, or Change Balance Due Key is used.

51A563	Counter Engaging Lifter Link #1	3.840
51A2569	Counter Engaging Lifter Link #2	3.850
51A2573	Counter Engaging Lifter Link #3	3.860
51A2571	Counter Engaging Lifter Link #4	3.870

The eccentric on the Lifter Link is used to adjust the position of the Counter Engaging Link when the Unit Lock Lever is out of the Register Position.



Counter Engaging Lifter Links (Lower Counter)

By using one of the Counter Engaging Lifter Links listed below, adjust the Counter Engaging Links for a good hold on the stud in the Counter Engaging Cam Arm when the Total or Tax Total Keys are used.

51A14355	Counter Engaging Lifter Link #1	3.840
51A14357	Counter Engaging Lifter Link #2	3.850
51A14359	Counter Engaging Lifter Link #3	3.860
51A14361	Counter Engaging Lifter Link #4	3.870

The Eccentric on the Lifter Link is used to adjust the position of the Counter Engaging Links when the Change Balance Due Key is used and when the Unit Lock Lever is in Read Row 1 or Reset Row 2 minus.

ADDITION AND TRANSFERS

SECTION "H"

ADDITION AND TRANSFERRING

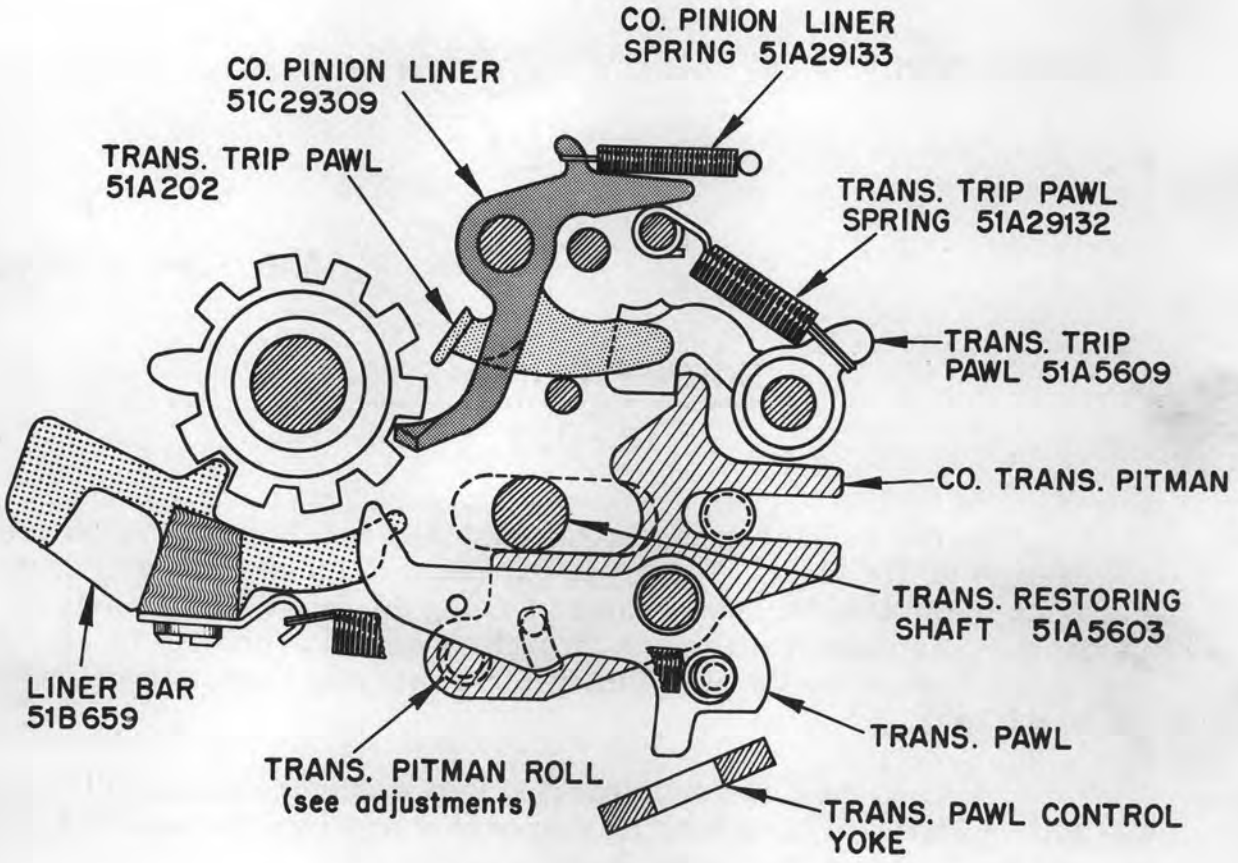
With the Machine in the home position, the Transfer Restoring Shaft 51A5603 is held just to the front of the Transfer Pitmans.

The Transfer Pitmans are retained by the Transfer Trip Pawl and the Counter Pinion Liner Spring is holding the Counter Pinion Liner into the teeth of the Counter Pinion.

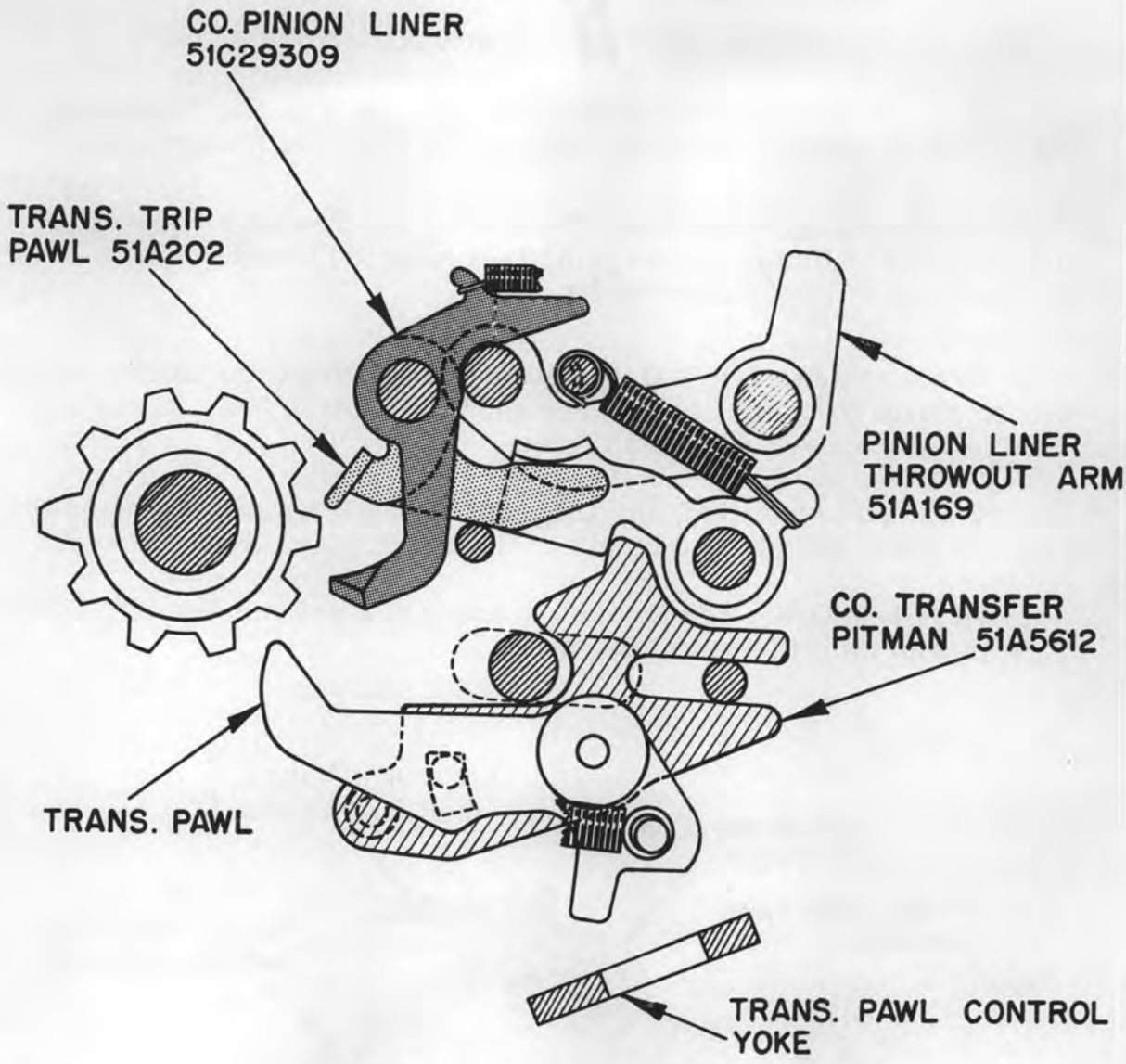
From home to 1/8 T. O. H., the Transfer Restoring Shaft 51A5603 will be moved to the front until it is approximately 2/3 of the way forward in the raceways in which it rides.

On an Add operation, the Differential Segments are moved up the bank until they are stopped by either the key pressed or the Zero Stop.

At 3/4 T. O. H., the Counter is engaged which meshes the Counter Pinions with the Differential Segments.



1/8 T.O.H.
(C-52)



COUNTER IN MESH

(C-52)

As the Counter engages, the Pinion Liner throw out arms are carried to the front. The upper extension of these arms will contact studs in the Counter Side Frames forcing the throw out arms up in front. The shaft that extends through these two arms will be carried up and contact the Counter Pinion Liners forcing them to swing bottom to the back.

Also as the Counter is carried into mesh, the Transfer Pitmans will be moved to the front, leaving only a small gap between the pitmans and the Transfer Restoring Shaft.

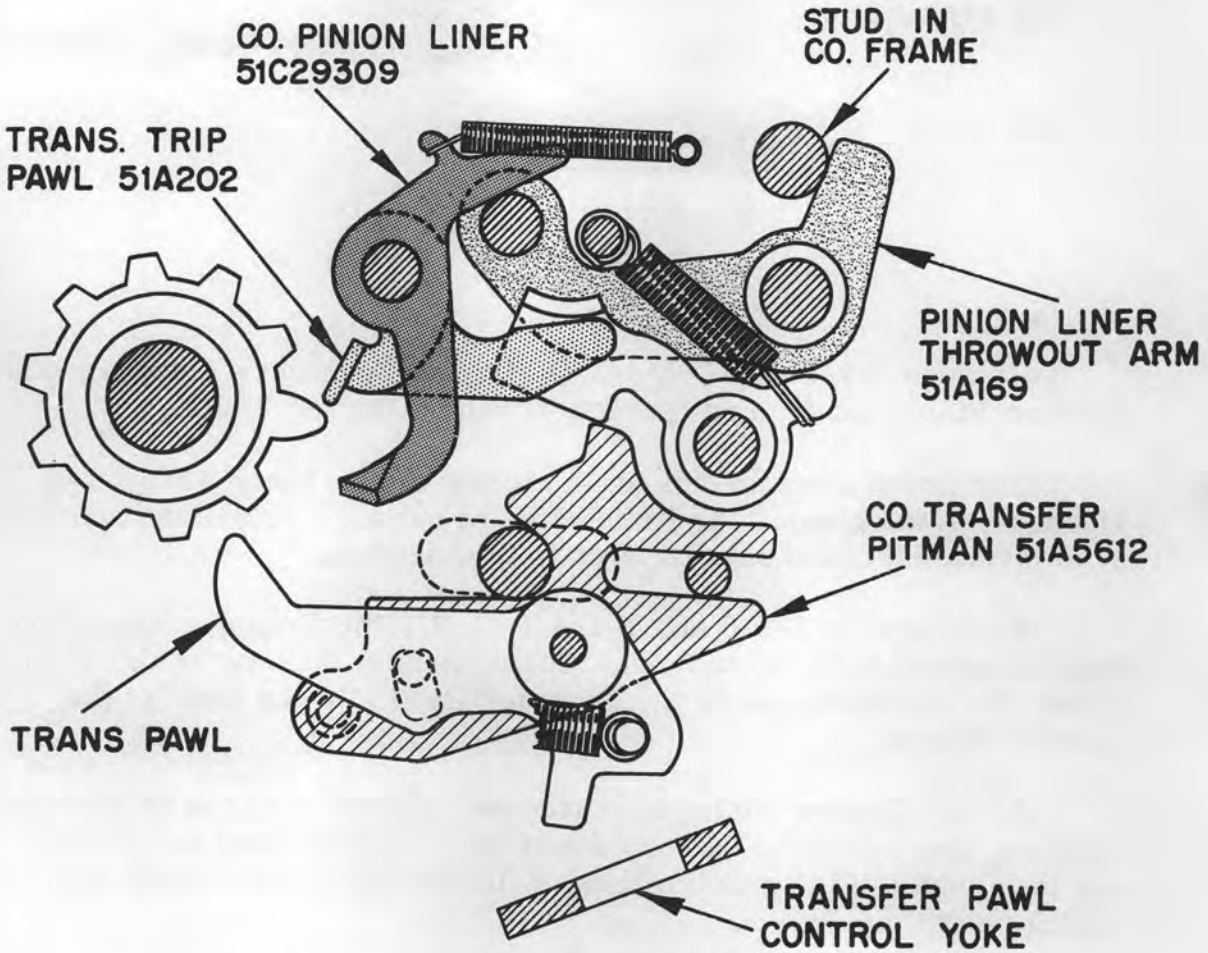
As the Differential Segments are carried down, the Counter Pinions are turned top to the back. The number of positions that the Counter Pinions turn at this time is determined by the key pressed.

When an amount is added to a Counter Pinion which causes the long tooth to move from 9 to 0, a Transfer will be tripped in the next highest bank.

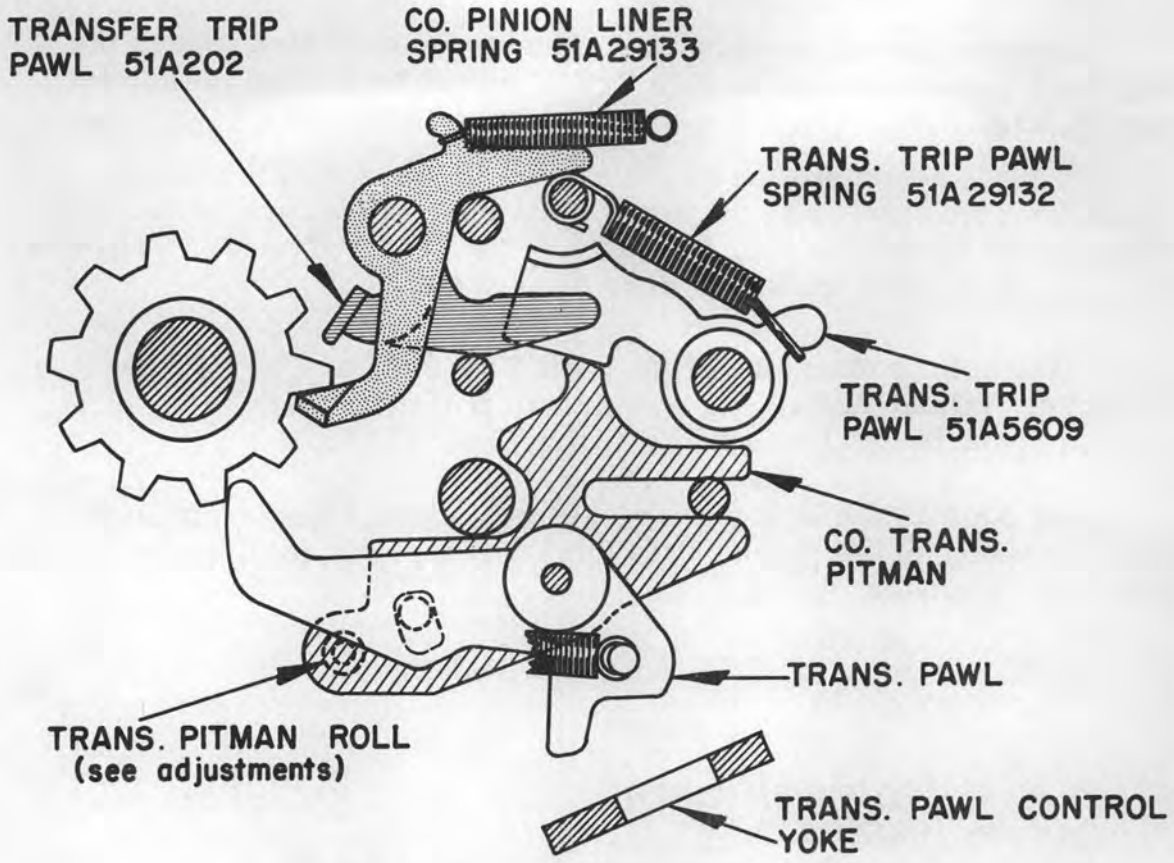
This is accomplished by the long tooth contacting the "front" Transfer Trip Pawl and swinging it up in back. The back of this pawl will contact the turned over extension of the "back" Transfer Trip Pawl for the next highest bank and carry it up in front.

The bottom extension of the back Trip Pawl will move above the Transfer Pitman and spring tension will pull the pitman to the front until it contacts the Transfer Restoring Shaft 51A5603.

As soon as the long tooth passes below the "front" Trip Pawl, spring tension on the "back" Trip Pawl will carry it down against the top of the Transfer Pitman.



TRANSFER TRIPPED
(C-52)


TRANSFER TRIP PAWL 51A202
CO. PINION LINER SPRING 51A29133
TRANS. TRIP PAWL SPRING 51A29132
TRANS. TRIP PAWL 51A5609
CO. TRANS. PITMAN
TRANS. PAWL
TRANS. PITMAN ROLL (see adjustments)
TRANS. PAWL CONTROL YOKE

TRANSFERING

(C-52)

Between 1-1/8 and 1-1/4 T. O. H., the Counter is disengaged and the Counter Pinion Liners are carried into the Counter Pinions.

The Lower Counter has an Auxiliary Pinion Liner Throw-Out Mechanism which holds the Pinion Liners out until Transfers are made. This mechanism is explained later in this section.

Also between 1-1/8 and 1-1/4 T. O. H., the Transfer Restoring Shaft is moved fully to the front. Spring tension will cause the Transfer Pitman to follow and carry the Transfer Pawl into the teeth of the Counter Pinion.

As the Counter Pinion is moved out of mesh with the Differential Segment, the combined movements of the Transfer Pawl to the front and the Counter Pinion to the back, will turn the Pinion top to back adding one to the Pinion.

The Pinion Liner will be cammed out as the Pinion is turned and will be carried back into the next tooth as the Pinion is fully positioned.

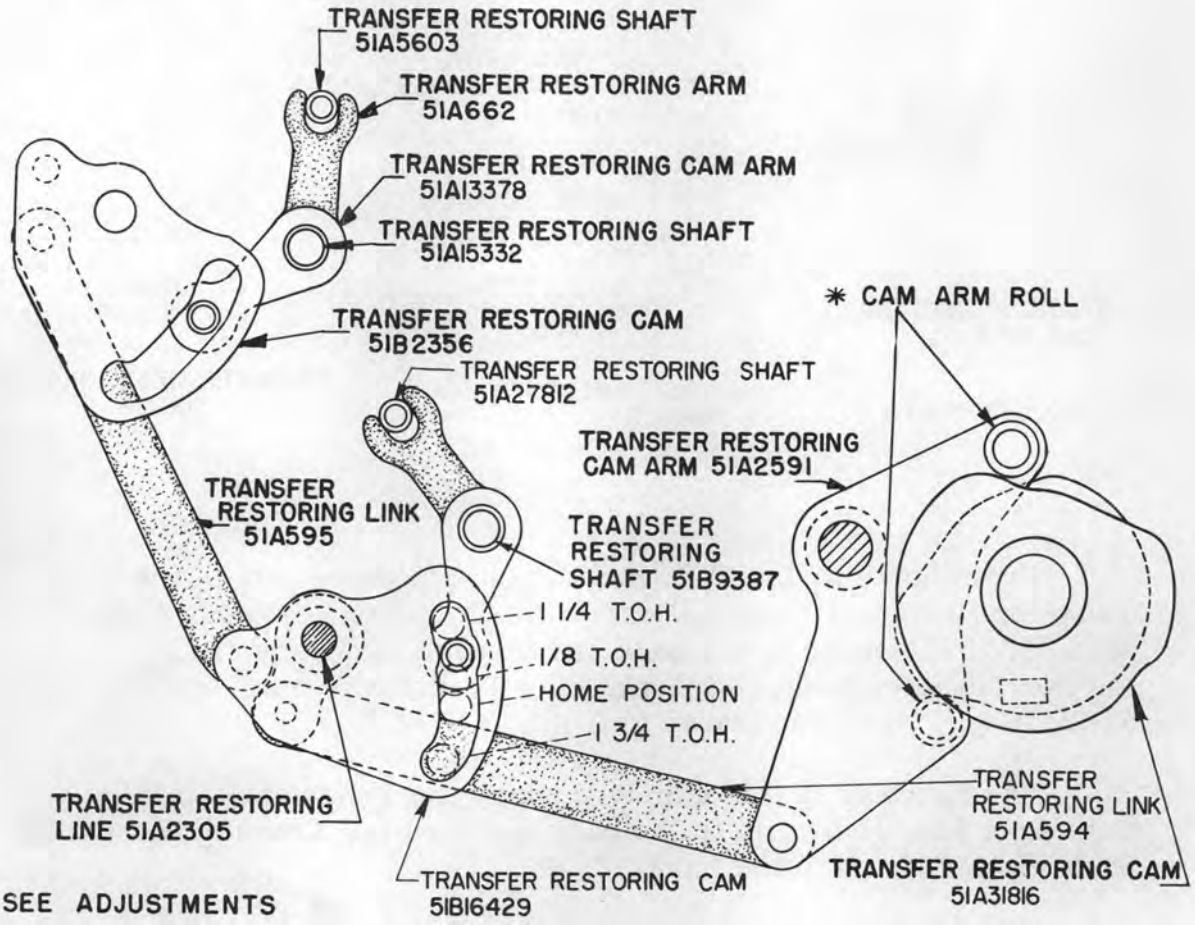
Transfer Restoring

From 1-1/2 to 1-3/4 T. O. H., the Transfer Restoring Shafts will be moved to the back, restoring the Transfer Pitmans.

As the Transfer Pawl moves back, the Pinion is prevented from backing up by a locking surface of the Pinion Liner. The Transfer Pawl will be cammed down in the front, out of the Pinion.

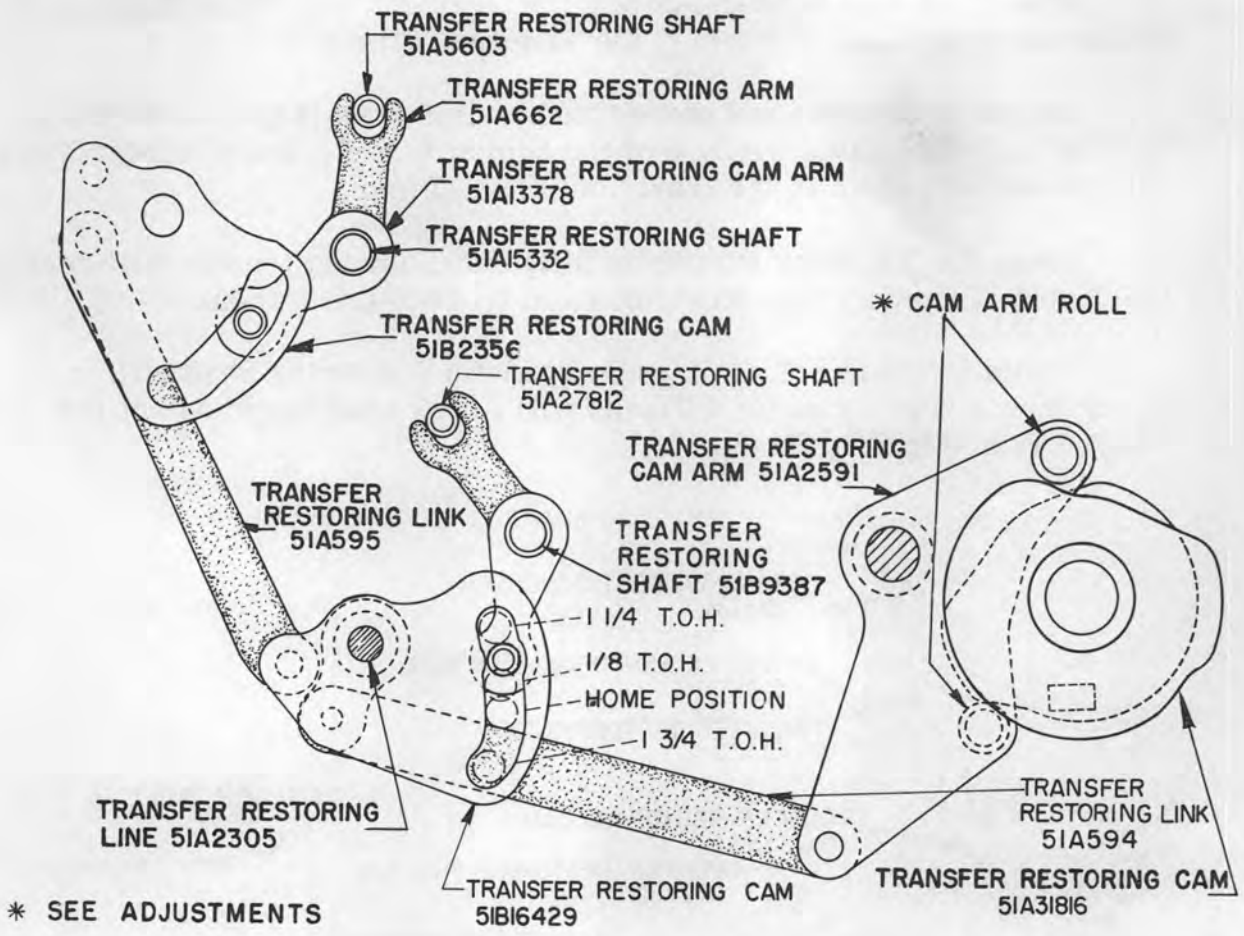
When the Transfer Pitman is fully back, spring tension will restore the "back" Transfer Trip Pawl, down in front of the Pitman.

From 1-7/8 to 2 T. O. H., the Transfer Restoring Shaft will move to the front. The Transfer Pitmans will follow until they contact the "back" Transfer Trip Pawls.



The Transfer Restoring Shafts 51A5603 (Upper Counter) and 51A27812 (Lower Counter) receive their movement from the Transfer Restoring Cam pinned to the cam line. Since the construction of the Upper Counter and Lower Counter Transfer Restoring Mechanism is identical, only the Upper Counter will be explained.

TRANSFER RESTORING MECHANISM



From home to 1/8 T. O. H., the Intermediate part of the Transfer Restoring Cam will carry the Transfer Restoring Cam Arm 51A2591 bottom to the back and through the connections of the two Transfer Restoring Links, the Transfer Restoring Cam 51B2356 will be carried down in front.

The raceway in this cam will carry the Transfer Restoring Cam Arm 51A602 bottom to the back and turn the Transfer Restoring Shaft 51A15332 top to the front.

The two Transfer Restoring Arms 51A662 are pinned to the Restoring Shaft 51A15332 and yoke the Transfer Restoring Shaft 51A5603.

As the Restoring Shaft 51A15332 turns, the Restoring Arm will be moved to the front which will carry the Restoring Shaft 51A5603 to the front.

From 1-1/8 to 1-1/4 T. O. H., the high part of the Transfer Restoring Cam 51A31816 will contact the bottom roll of the Transfer Restoring Cam Arm 51A2591 giving it more carry, bottom to the back.

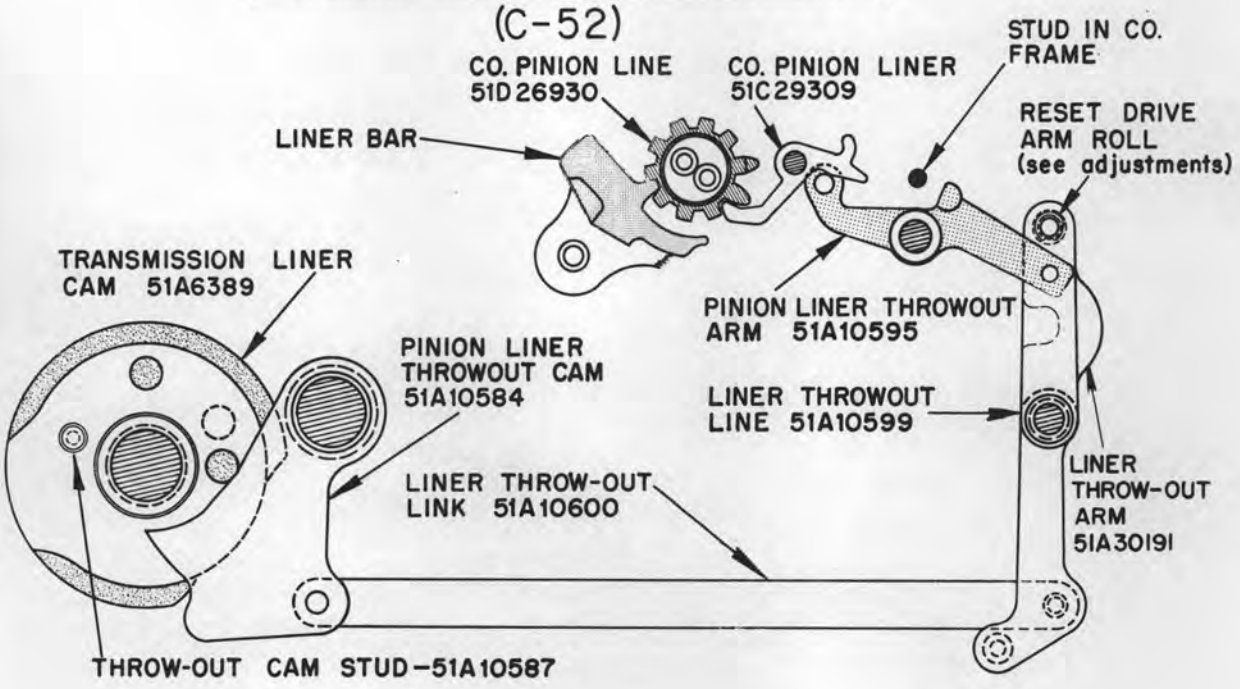
Through the connections previously explained, the Transfer Restoring Shaft 51A5603 will be moved further to the front allowing Transfers that were tripped to make.

Between 1-1/2 and 1-3/4 T. O. H., the Transfer Restoring Cam 51A31816 will carry the Transfer Restoring Cam Arm 51A2591 top to the Back. This reverses movememt to the Transfer Restoring Shaft 51A5603 and will restore the Transfer Pitmans with lead.

From 1-7/8 to 2 T. O. H., the Transfer Restoring Cam Arm 51A2591 is carried bottom to the back by the Intermediate Part of the Restoring Cam 51A31816. This will move the Transfer Restoring Shaft 51A5603 top to the front away from the Transfer Pitmans.

PINION LINER THROW-OUT

(C-52)

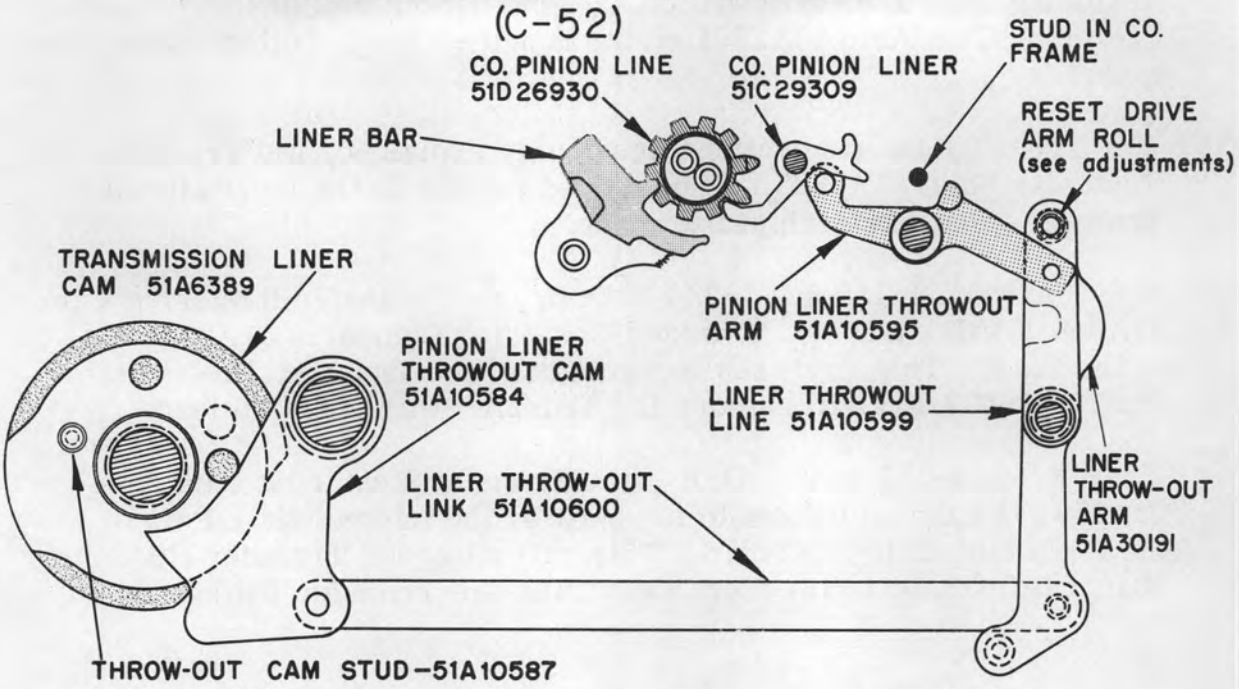

CO. PINION LINE 51D26930
CO. PINION LINER 51C29309
STUD IN CO. FRAME
LINER BAR
RESET DRIVE ARM ROLL (see adjustments)
TRANSMISSION LINER CAM 51A6389
PINION LINER THROWOUT ARM 51A10595
PINION LINER THROWOUT CAM 51A10584
LINER THROWOUT LINE 51A10599
LINER THROW-OUT LINK 51A10600
LINER THROW-OUT ARM 51A30191
THROW-OUT CAM STUD-51A10587

PINION LINER THROW OUT MECHANISM
(LOWER COUNTER)

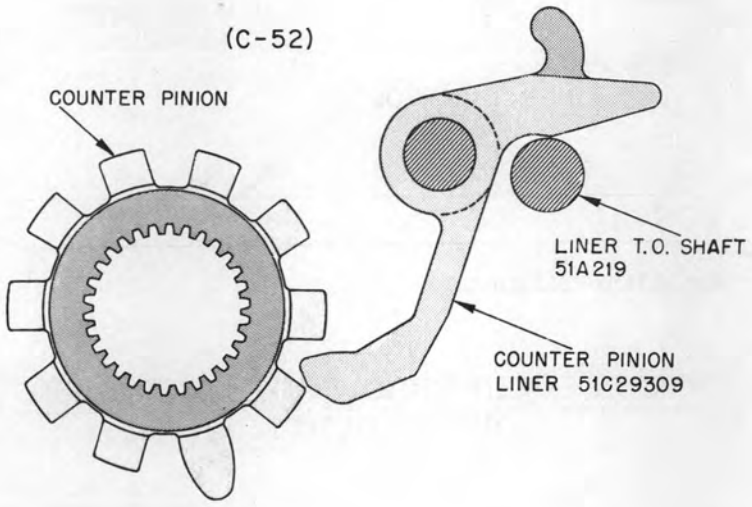
The Pinion Liner Throw-Out Mechanism holds the Pinion Liners out of the Counter Pinions as the Transfers are being made. This is necessary to allow the Minus Pinions to turn, bottom to the back, as the Transfer is being made to the Plus Pinions.

PINION LINER THROW-OUT

(C-52)



(C-52)



As the Counter is engaged at 3/4 T. O. H., the Pinion Liner Throw-Out arms 51A10595 and 51A10602 will contact studs in the Counter Frames. This raises the Liner Throw-Out Shaft and moves the pinion liners out of the Counter Pinions.

From 7/8 to 1-1/8 T. O. H., the stud in the Transmission Liner Cam will move the Pinion Liner Throw-Out Cam 51A10548 bottom to the back. This will carry the Liner Throw-Out Link and Liner Throw-Out Arm 51A10590 to the back and turn the Pinion Liner Throw-Out Line top to the front.

The Liner Throw-Out Arms 51A10598 and 51A30191 will be moved top to the front, positioning the Reset Drive Arm Rolls over the Pinion Liner Throw-Out Arms.

Between 1-1/8 and 1-1/4 T. O. H., as the Counter moves out of mesh, the Pinion Liner Throw-Out Arms will move away from the studs in the Counter Frames. This will allow the Counter Pinion Liner Springs to start to move the Liners into the Counter Pinions.

As the Liners are part way into the Pinions, the Pinion Liner Throw-Out Arms will be stopped by the Reset Drive Arm Rolls. This will stop the movement to the Pinion Liners and hold the locking surface out of the Pinions.

At 1-3/8 T. O. H., the stud in the Transmission Liner Cam moves away from the Pinion Liner Throw-Out Cam, allowing the Counter Pinion Liner Springs to move the Liners into the Pinions. This locks the Pinions so they will not be backed up as the Transfers are restored.

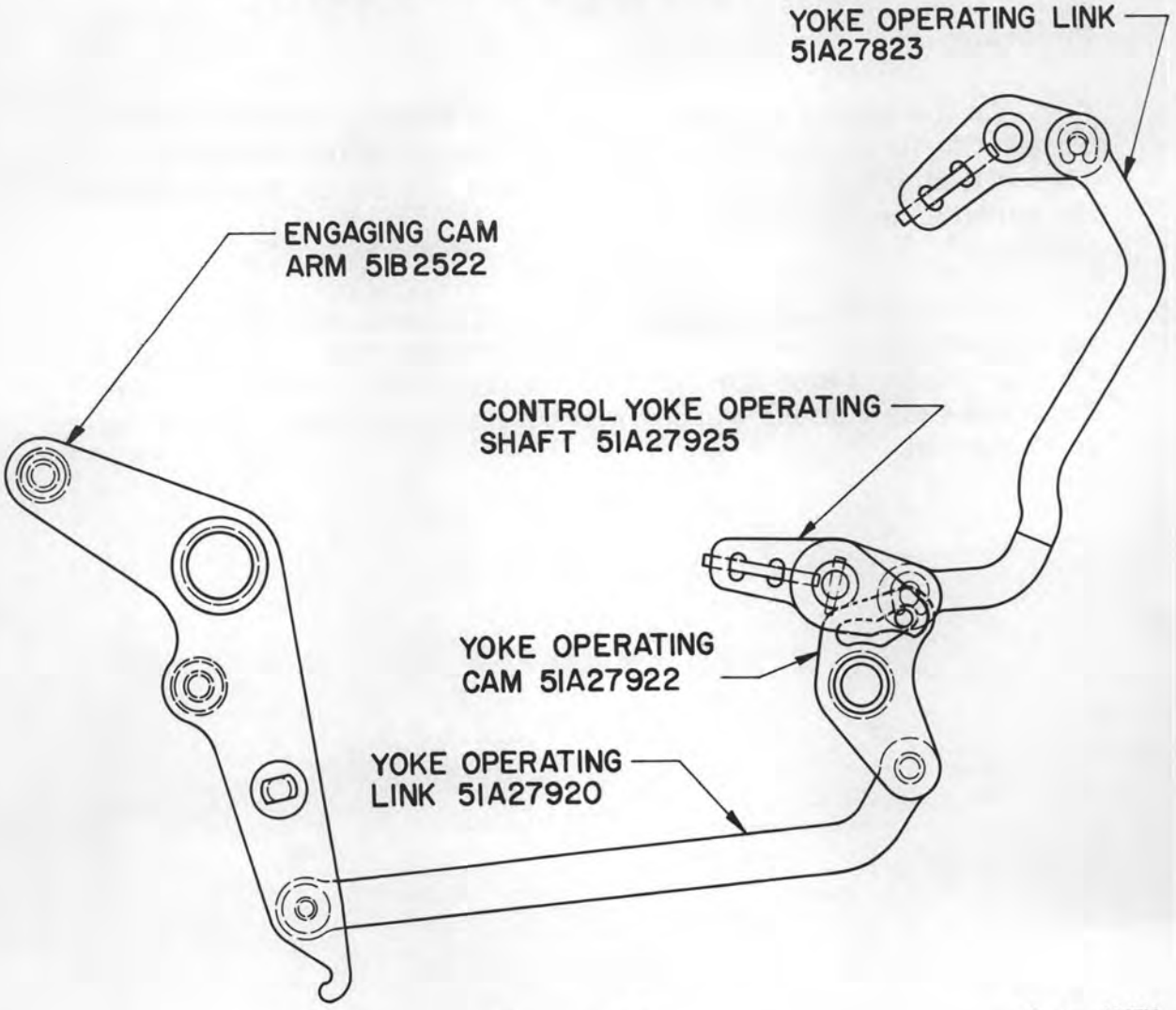
READ AND RESET OPERATION

From home to 1/8 T. O. H., the Counter Engaging Cam will move the Engaging Cam Arm 51B2522 bottom to the front. The Yoke Operating Link 51A27920 will be carried to the front and move the Yoke Operating Cam top to the back.

The raceway in this cam is around a stud in the Control Yoke Operating Arm and will force the Operating Arm down in back and raise the Transfer Pawl Control Yoke up in front. The openings in the Yoke will move around the lower extensions of the Transfer Pawls. The Yoke Operating Link 51A27823 will be carried down, which will raise the upper Transfer Pawl Control Yoke.

As the Counter is carried into mesh, the Transfer Pitmans will be moved to the front and since the bottom of the Transfer Pawls are being held by the Transfer Pawl Control Yokes, the front of the pawls will be moved down. This will hold the pawls out of the path of the long teeth as the Counter Pinions are being reset to zero.

TRANSFER PAWL CONTROL YOKE



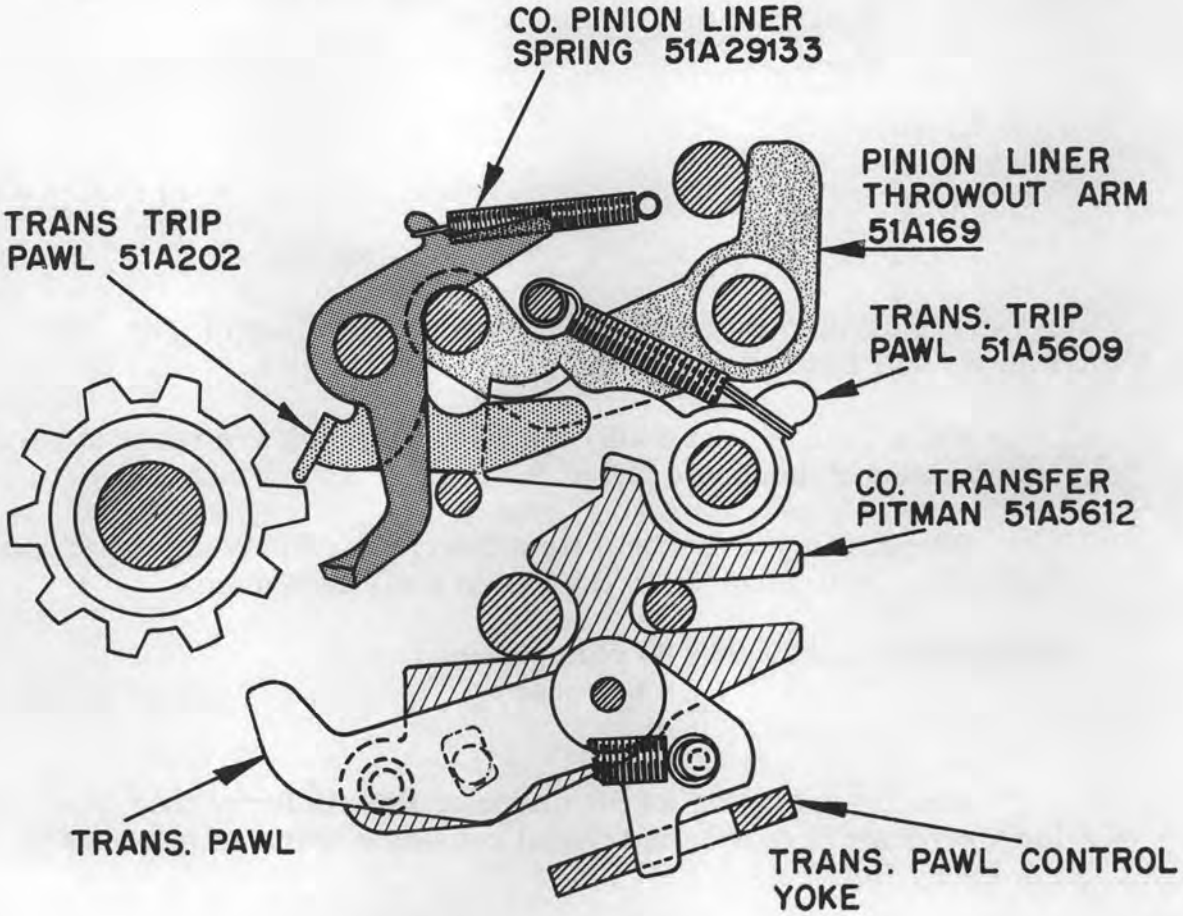
Between 1/8 and 3/8 T. O. H., the Differentials Segments are moved up in front by the Segment Springs. The Counter Pinions will be turned bottom to the back until the long teeth contact the front Transfer Trip Pawls. This stops the Counter Pinions at zero and stops the Differential Segements in a position corresponding to the amount taken off the Pinions.

As the Counter is disengaged between 1/2 and 5/8 T. O. H., the Transfer Pitman Springs will move the Transfer Pawls up in front.

Also at this time, the Engaging Cam will contact the roll on the bottom of the Engaging Cam Arm and carry it bottom to the back, lowering the Transfer Pawl Control Yokes.

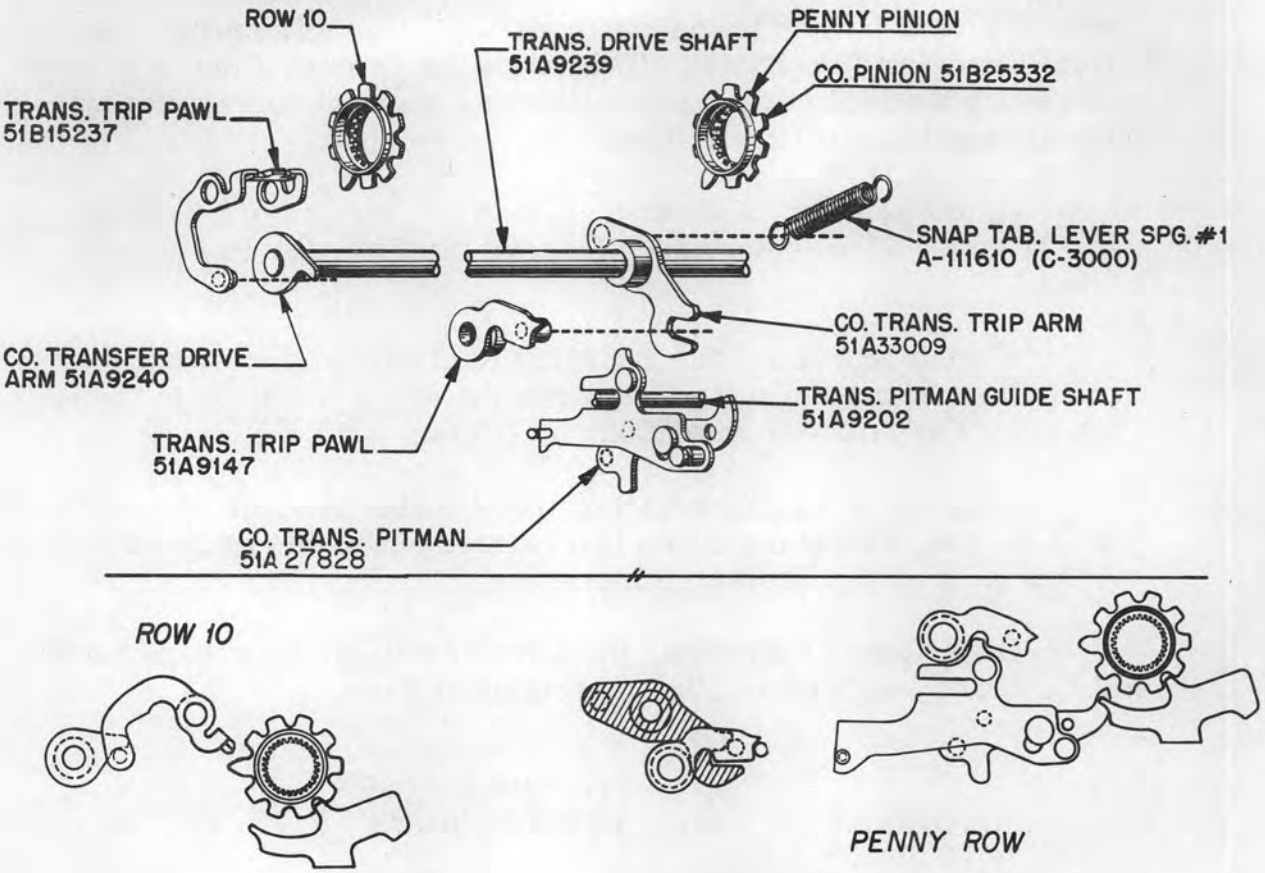
If this is a 'Read' operation, the Counter is again engaged at 3/4 T. O. H. and, as the Segments are carried down, the amounts are Added back on the Counter Pinions.

On a 'Reset' operation, the Counter will not be engaged at 3/4 T. O. H. and the Counter Pinions remain at zero.


CO. PINION LINER SPRING 51A29133
PINION LINER THROWOUT ARM 51A169
TRANS TRIP PAWL 51A202
TRANS. TRIP PAWL 51A5609
CO. TRANSFER PITMAN 51A5612
TRANS. PAWL
TRANS. PAWL CONTROL YOKE

READ—RESET

(C-52)



OVERDRAFT - TRANSFERRING

Following a Balance Due Operation (no-change), the Plus Pinions will be at zero and the Minus Pinions at 9.

On a Change Operation, the Minus Pinions are reset to zero and the Plus Pinions are left at 9.

The amount of the first Item Operation, following the Change Operation, will be added to the 9's on the Plus Pinions.

EXAMPLE:

A99,999.99 plus pinions.
.49 Grocery
A00,000.48

On this operation as the pinion in Row 10 turns from 9 to zero, the Overdraft Line will be tripped causing a transfer to be made into the Penny Row.

A00,000.48 Plus Pinion
.01 Overdraft Transfer
A00,000.49 Plus Pinion

As the long tooth of Row 10 pinion moves from 9 to 0, it will contact the Transfer Trip Pawl 51B15237 carrying it down in front. The stud in the back of the Trip Pawl will move up, carrying the Counter Transfer Drive Arm 51A9240 up in front and turn the Overdraft Line top to the back.

The Counter Transfer Trip Arm 51A33009, which is pinned to the Overdraft Line and yokes a stud in the Transfer Trip Pawl 51A9147, will be moved up in front. This will raise the Transfer Trip Pawl 51A9147 above the extension of the Counter Transfer Pitman 51A27828 (Penny Row).

Spring tension will now move the Transfer Pitman to the front against the Transfer Restoring Shaft.

The extension on top of the Counter Transfer Pitman will move under the Transfer Trip Pawl and hold the Overdraft Line in a tripped position.

Row 10 Transfer Trip Pawl will be restored by spring tension into the path of the long tooth of the Counter Pinion.

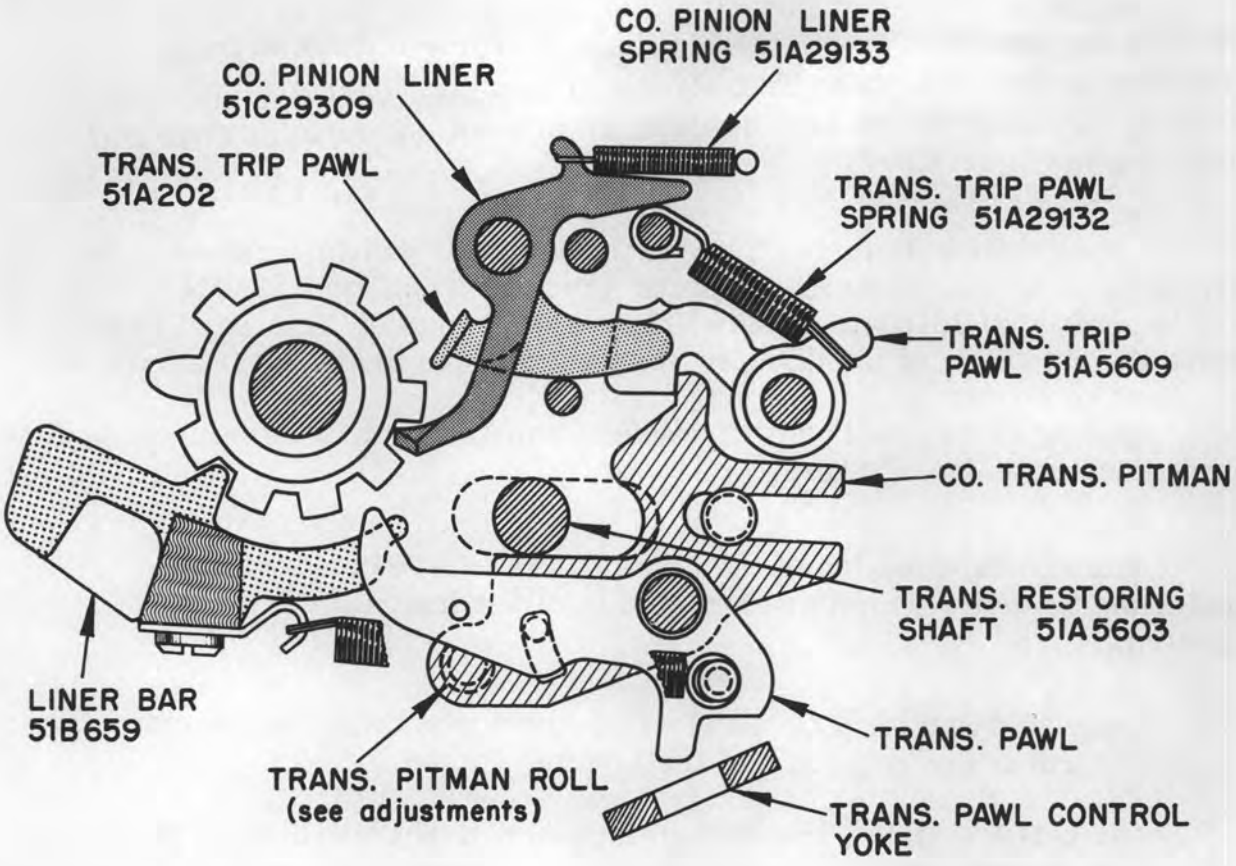
At 1-1/2 T. O. H., the Transfer Restoring Shaft will move the Transfer Pitman to the back, allowing spring tension to restore the Over-draft Line and move the Transfer Trip Pawl down in front of the Pitman.

If an Amount Tendered Operation is now made, putting amount on the Minus Pinions which is larger than the amount on the Plus Pinions, the Overdraft Line will again be tripped.

With . 49¢ on the Plus Pinions, the Minus Pinions will be at A99, 999. 50.

NOTE: The amount on the Plus Pinion and Minus Pinion, in any group, will always equal 9.

A99, 999. 50 Minus Pinion
1. 00 Amount Tendered
A00, 000. 50 Minus Pinion
. 01 O. D. Transfer
A00,000. 51 Change



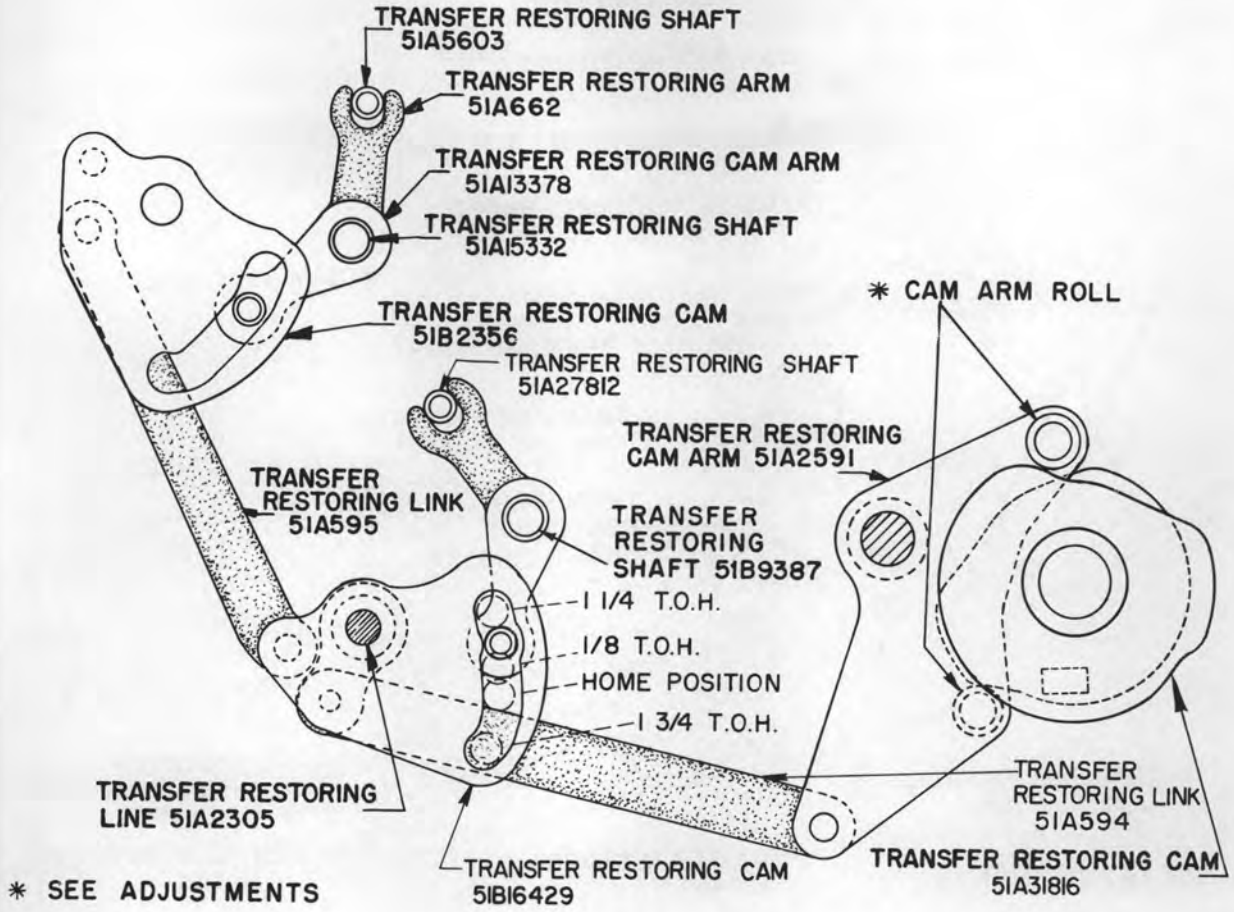
ADJUSTMENTS

Transfer Pitmans

1. A roll should be used on the Transfer Pitman that will hold the Transfer Pawl out of the path of the short teeth, with Transfers restored. The following rolls are available for making this adjustment:

   51A26426 Transfer Pitman Roll . 172
   51A26429 Transfer Pitman Roll . 180
   A-94328 C-1900 Counter Shifting Arm Roll . 187
   51A26428 Transfer Pitman Roll . 196
   51A26427 Transfer Pitman Roll . 204
   51A26902 Transfer Pitman Roll . 212
   51A26903 Transfer Pitman Roll . 220

TRANSFER RESTORING MECHANISM



Transfer Restoring Links

There are 8 Transfer Restoring Links available for adjusting the carry to the Transfer Restoring Cam Arms. (3 upper links and 5 lower links).

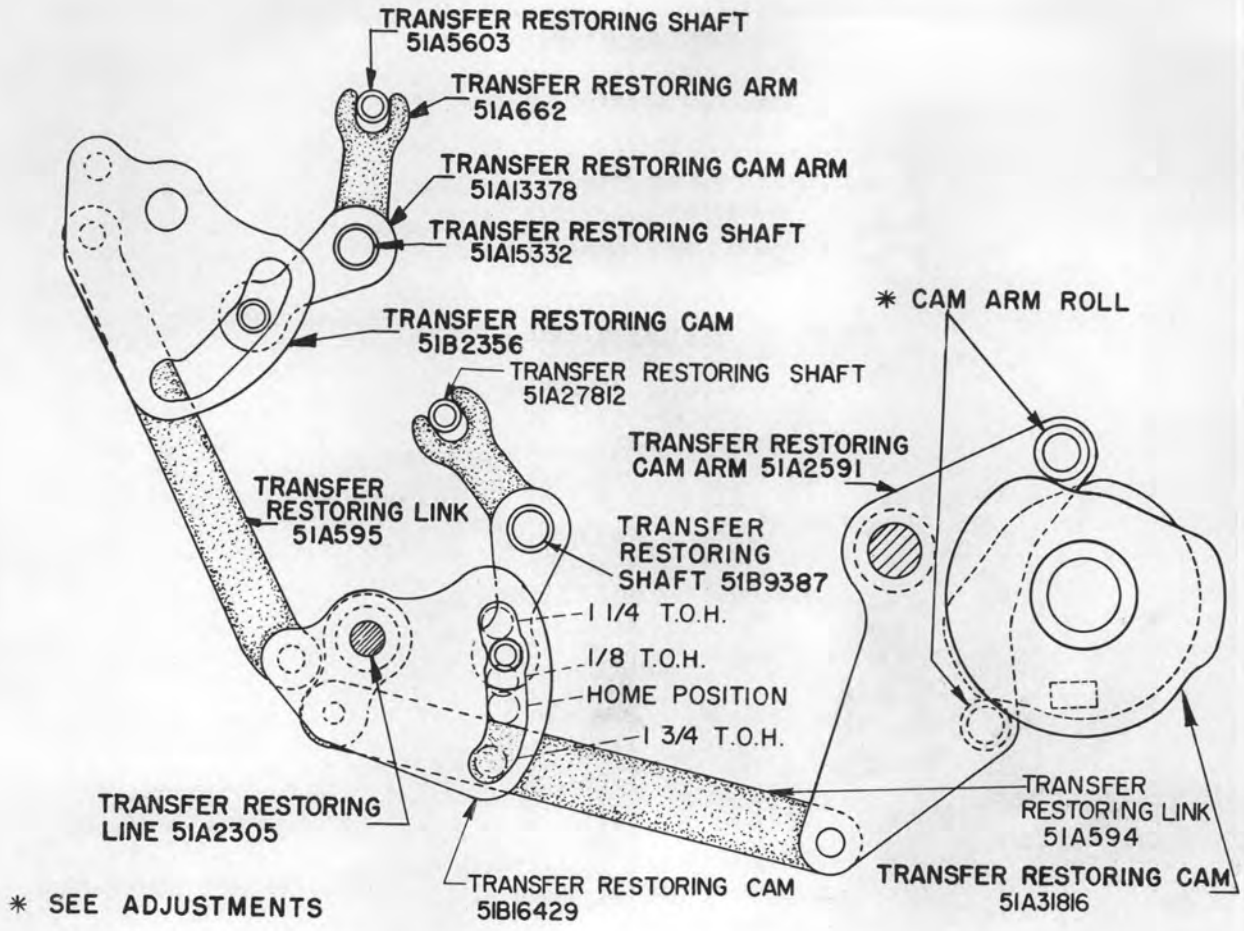
A link should be selected which will carry the ends of the raceway in the cam an equal distance from the roll on the Transfer Restoring Cam Arm, when the cams are in a rai sed or lowered position.

The links for making this adjustment are listed below.

Lower Link

51A594	Transfer Restoring Link	3.948
51A9967	Transfer Restoring Link	3.938
51A9968	Transfer Restoring Link	3.928

TRANSFER RESTORING MECHANISM



Upper Link

51A595	Transfer Restoring Link	3. 655
51A9969	Transfer Restoring Link	3. 645
51A9970	Transfer Restoring Link	3. 635
51A9971	Transfer Restoring Link	3. 665
51A9972	Transfer Restoring Link	3. 675

NOTE:

If Lower Link is replaced, check the tests and adjustments in counter shifting section step # 6.

2.

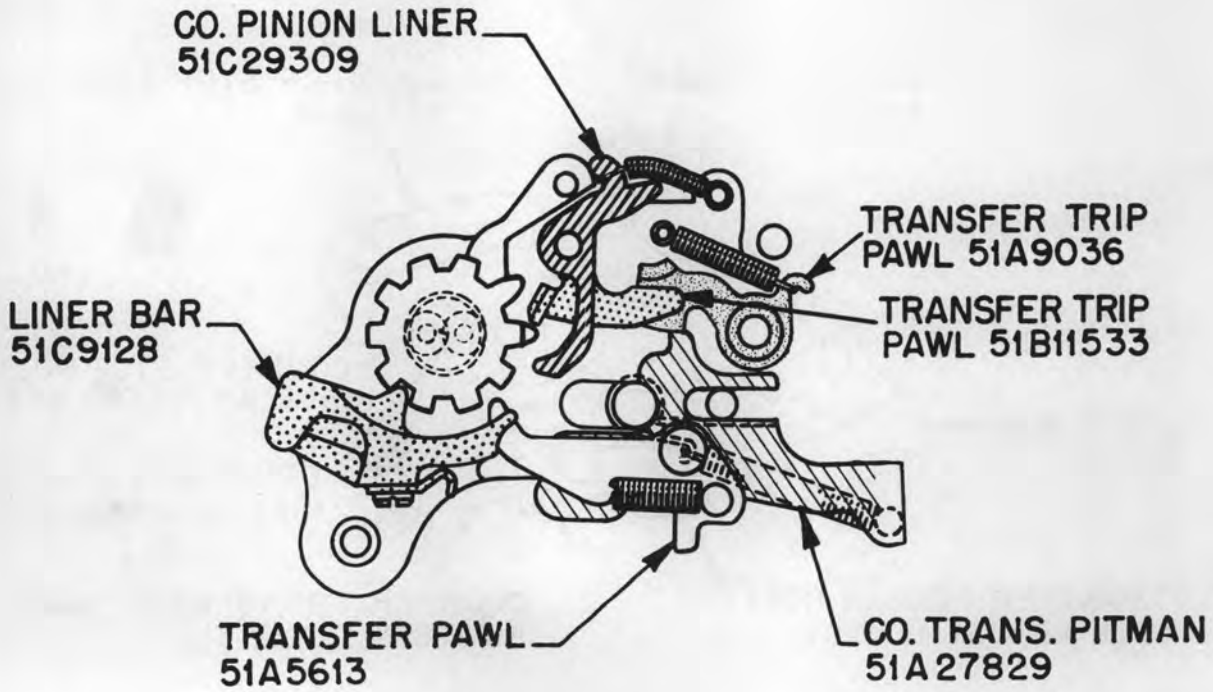
Operate to 1 T. O. H. (item operation) and trip a Transfer in both the upper and lower Counter.

Move the Transfer Restoring Cams up and down in back, taking out the play. There should be no movement to the Transfer Pitmans just tripped.

Any movement to the Transfer Pitmans indicates too much play, either in the Restoring Link Connections, or between the Transfer Restoring Cam Arm 51A2591 and Restoring Cam on the Cam Line.

Cam Arm Rolls 51A5868 (. 3748) and 51A30764 (. 379) may be used for removing excessive play between the Cam Arm and Cam.

NOTE: If the Cam Arm Rolls are replaced, repeat the above test (Item 1.) to be sure that the Transfer Restoring Cam 51B2356 and 51B16429 are positioned properly.



Transfer - Tripping

Operate machine to 1 T. O. H. and manually trip a Transfer in each Counter. Use a straight edge across the tails of the Transfer Pitmans and gauge the clearance between straight edge and tripped Pitman.

Clearance should be . 030 to and . 040 upper Counter and . 020 to . 030 lower Counter.

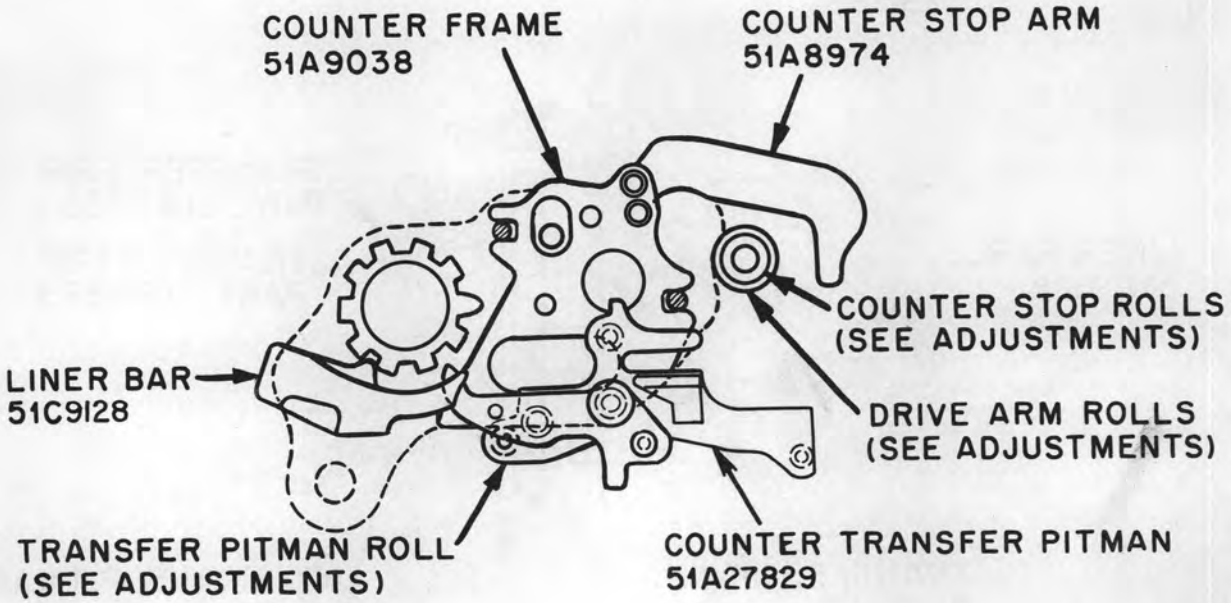
Trip all transfers but two (both counters) and again gauge the trup clearance. Clearance should not exceed .055 in either counter.

To adjust trip in the lower counter, broach the two Transfer Restoring Arms that yoke the Transfer Restoring Shaft 51A27812.

For upper Counter adjustment, broach the Transfer Restoring Cam Arm 51A13378 that is pinned to the Transfer Restoring Shaft 51A15332.

NOTE: Use caution when making this adjustment, Transfers are lost if Trip Pawls latch back up or if Transfer Pitmans trip too far.

(C-52)



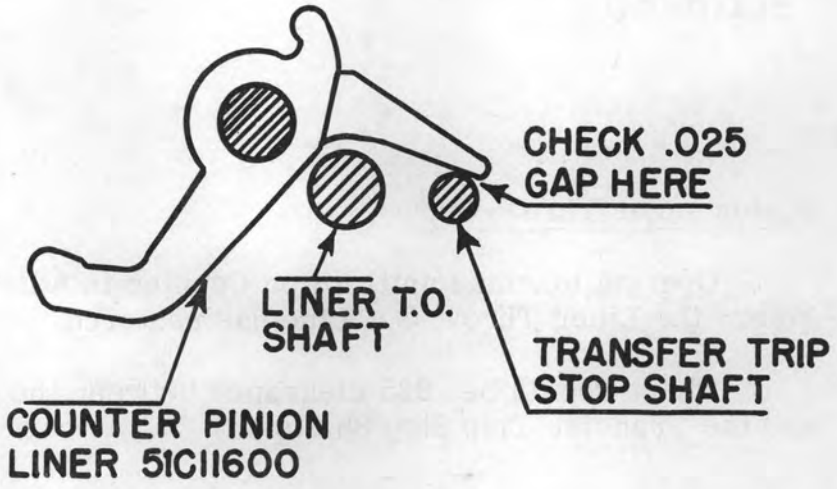
Transfer - Restoring

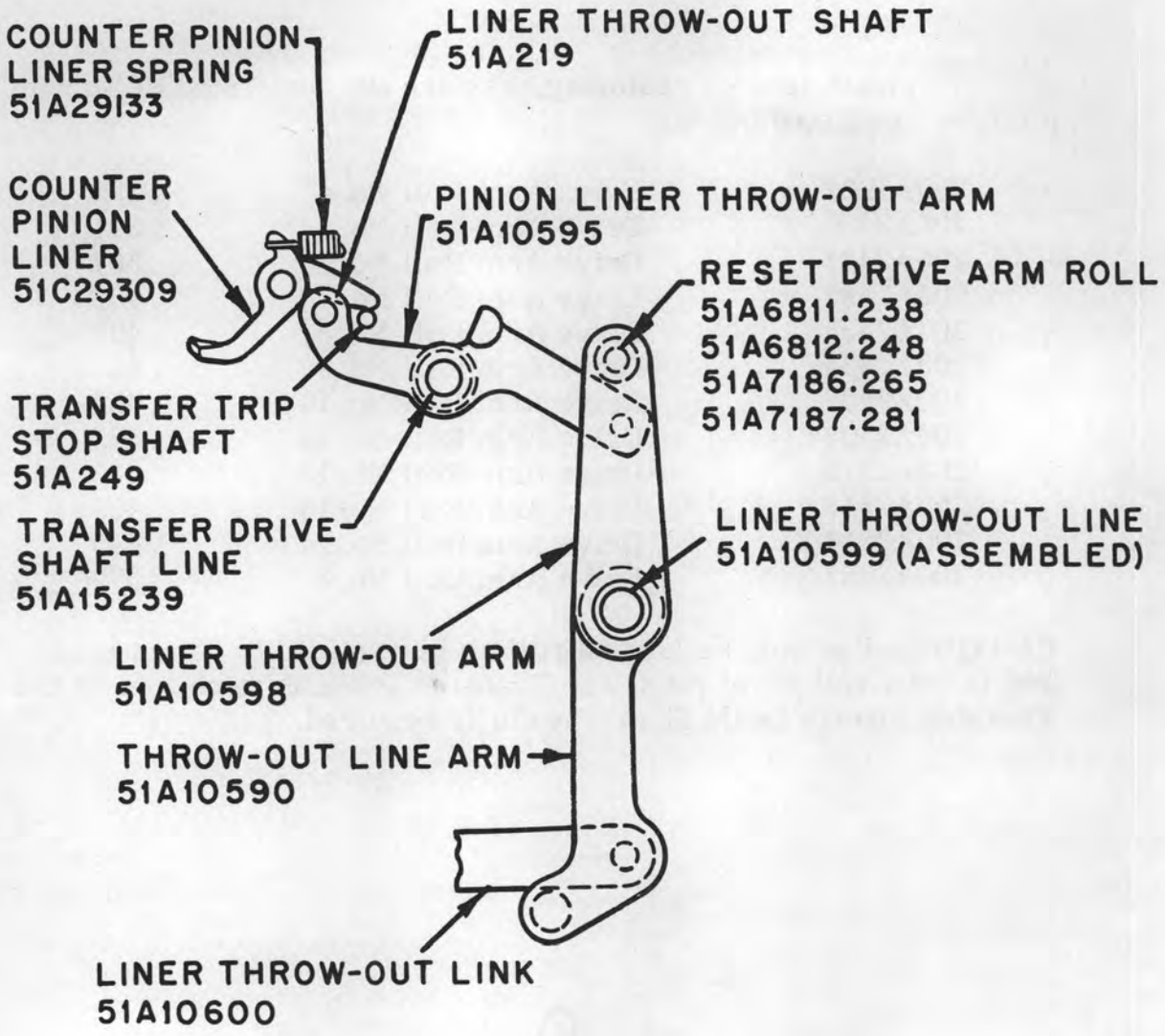
Operate machine slowly to 1-3/4 T. O. H. Watch the Transfer Pitmans and as the Trip Pawls restore, there must be lead to the Pitmans.

To obtain lead on restoring, replace the "out" Stop Rolls with a larger one listed below:

200A1922	Drive Arm Roll No. 4	.385
200A2430	Drive Arm Roll No. 5	.391
200A2431	Drive Arm Roll No. 6	.397
200A2432	Drive Arm Roll No. 7	.403
200A2433	Drive Arm Roll No. 8	.409
200A2434	Drive Arm Roll No. 9	.415
200A2505	Drive Arm Roll No. 10	.421
200A2506	Drive Arm Roll No. 11	.427
200A2515	Drive Arm Roll No. 12	.433
200A2516	Drive Arm Roll No. 13	.439
200A2517	Drive Arm Roll No. 14	.445
200A3057	Drive Arm Roll No. 2	.379

CAUTION: Use only as large a roll as is required to obtain lead. Too large a roll could cause the Transfer Pitmans to bottom on the Transfer Pitman Guide Shaft when fully restored.




COUNTER PINION LINER SPRING 51A29133
LINER THROW-OUT SHAFT 51A219
COUNTER PINION LINER 51C29309
PINION LINER THROW-OUT ARM 51A10595
RESET DRIVE ARM ROLL 51A6811.238 51A6812.248 51A7186.265 51A7187.281
TRANSFER TRIP STOP SHAFT 51A249
TRANSFER DRIVE SHAFT LINE 51A15239
LINER THROW-OUT LINE 51A10599 (ASSEMBLED)
LINER THROW-OUT ARM 51A10598
THROW-OUT LINE ARM 51A10590
LINER THROW-OUT LINK 51A10600

Pinion Liner Throw-Out

Operate machine until lower Counter is fully out of mesh, but before the Liner Throw-Out Line has restored.

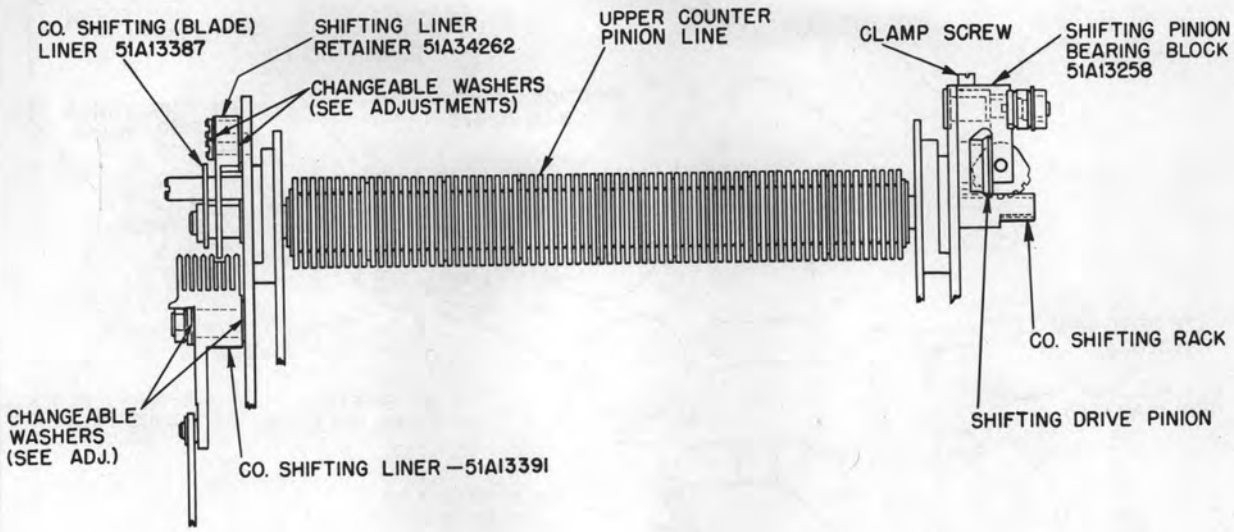
There should be .025 clearance between the tail of the liners and the Transfer Trip Stop Shafts.

To adjust, use the rolls listed below:

51A6811	Reset Drive Arm Roll	.238
51A6812	Reset Drive Arm Roll	.248
51A7186	Reset Drive Arm Roll	.265
51A7187	Reset Drive Arm Roll	.281

SECTION "I"

UPPER COUNTER
(C-52)



COUNTER SHIFTING

Upper Counter

The Upper Counter is shifted manually by Row 2 keys and the Grocery Motor Bar.

The Meat, Produce, Misc Keys and Grocery Motor Bar shift the Counter to the left.

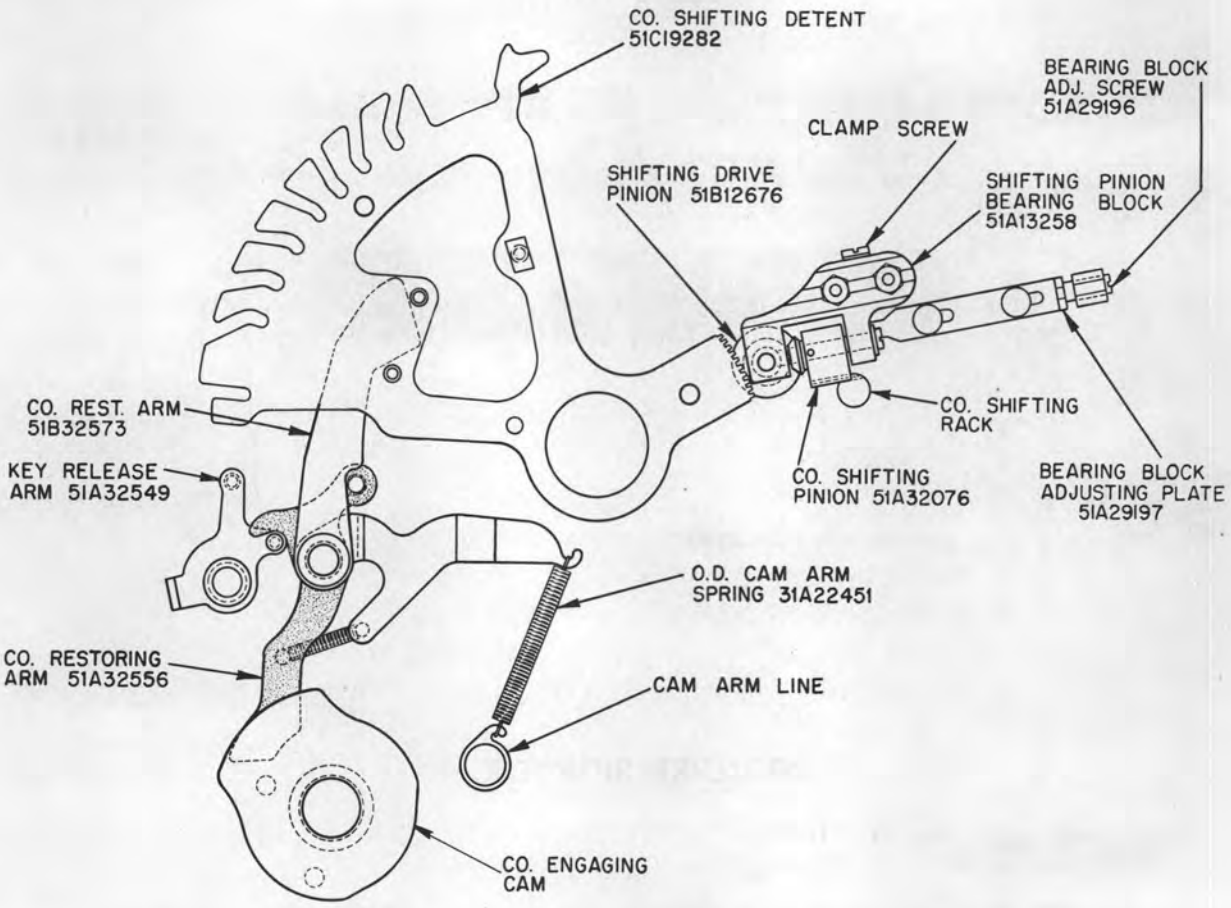
The Bakery Refund, Tax and Coupon Keys shift the Counter to the right.

The Taxable Total Key does not shift the Counter. The Total for this key represents the home position of the Counter.

The Taxable Item key has no Total, hence does not shift the Counter.

The Counter Shifting Detent is cut away beneath this key to allow the Detent to be moved with the Taxable Item Key pressed.

UPPER COUNTER SHIFTING
(C-52)



When the Meat Key is used, the key pin will cam the Counter Shifting Detent 51C19282 top to the back. As the Detent moves up in front, the bottom roll will cam the Counter Restoring Arm 51A32573 top to the front and up in back, stretching the spring attached to the back of this Arm.

The teeth on the back of the Detent are in mesh with the Shifting Drive Pinion located in the Shifting Bearing Block 51A13258. The Shifting Drive Pinion will turn top to the front of the Machine and being in mesh with the Counter Shifting Pinion will turn it bottom to the left.

The Counter Shifting Pinion is meshed with the Counter Shifting Rack which is screwed into the Counter Pinion Tube. The Counter Shifting Rack will be carried to the left, moving the Counter Pinion Tube and Pinions to the left and align the pinions for the Meat Total with the Differential Segments.

The amount of movement given the Counter is determined by the Camming surfaces of the Counter Shifting Detent.

At 1/8 T. O. H., a roll located between the Counter Engaging Cam 51A2432 and the special reset cam, will contact the Counter Restoring Arm and move it bottom to the front stretching the spring between the two Counter Restoring Arms.

This additional spring tension insures that the Counter Shifting Detent is snug against the key pin when the Counter is engaged.

At 3/4 T.O.H., a second roll, located between the Engaging Cam and Special Counter Reset Cam, will again add this spring tension to the Counter Shifting Detent.

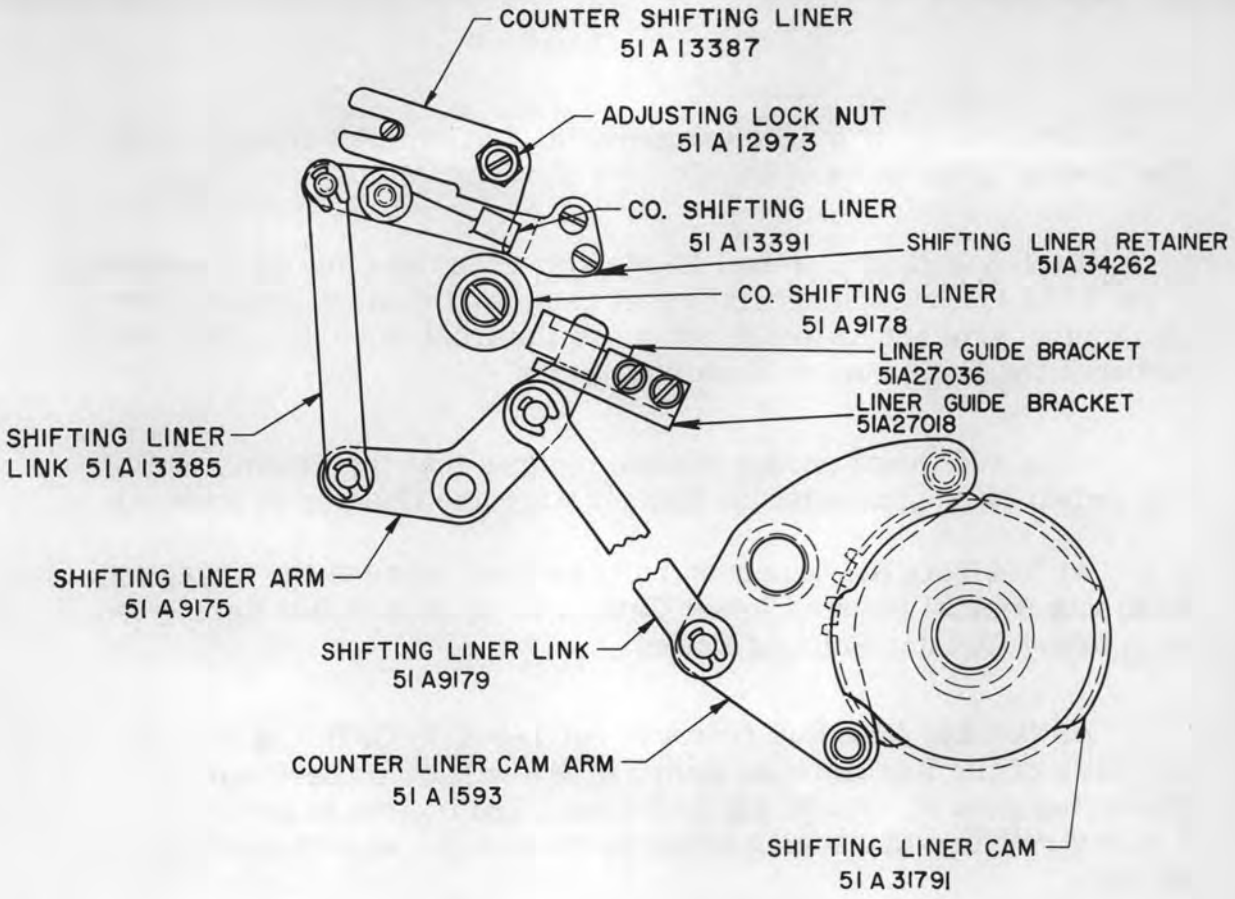
As the key lock line restores, at 1-3/4 T. O. H., a stud in the back of the Key Release Arm 51A549 will cam the Counter Restoring Arm 51A32556 top to the back and bottom to the front again stretching the spring between the two Counter Restoring Arms.

The additional spring tension is used at this time to assist in restoring the Counter to its home position.

When the lead is backed off of the key lock line, the stud in the key Release Arm will move away from the Counter Restoring Arm 51A32556 allowing this arm to restore and take the spring tension of the Counter Restoring Arm Spring 51A15535 off of the Counter Restoring Arm 51A32573.

When either the Coupon, Tax, Refund, or Bakery Keys are used, the Counter Shifting Detent will be cammed down in front and up in back. This reverses the movement through the Shifting Pinion Bearing Block and the Counter is shifted to the right.

If the Taxable Total Key is used, its key pin enters a straight cut in the Counter Shifting Detent leaving it in the home position. In this position, the Center Pinion of each Pinion group is aligned to engage the Differential Segments.



Counter Liners

The Counter Shifting Liners are used to align and hold the Counters while they are in mesh with the Differential Segments.

Between home and 1/8 T. O. H., the Shifting Liner Cam will carry the Liner Cam Arm bottom to the back. The Shifting Liner Link 51A9179 will be carried up moving the shifting Liner Arm 51A9175 top to the back to engage the Counter Shifting Liner 51A9178. This will align the lower Counter for Reset Timing.

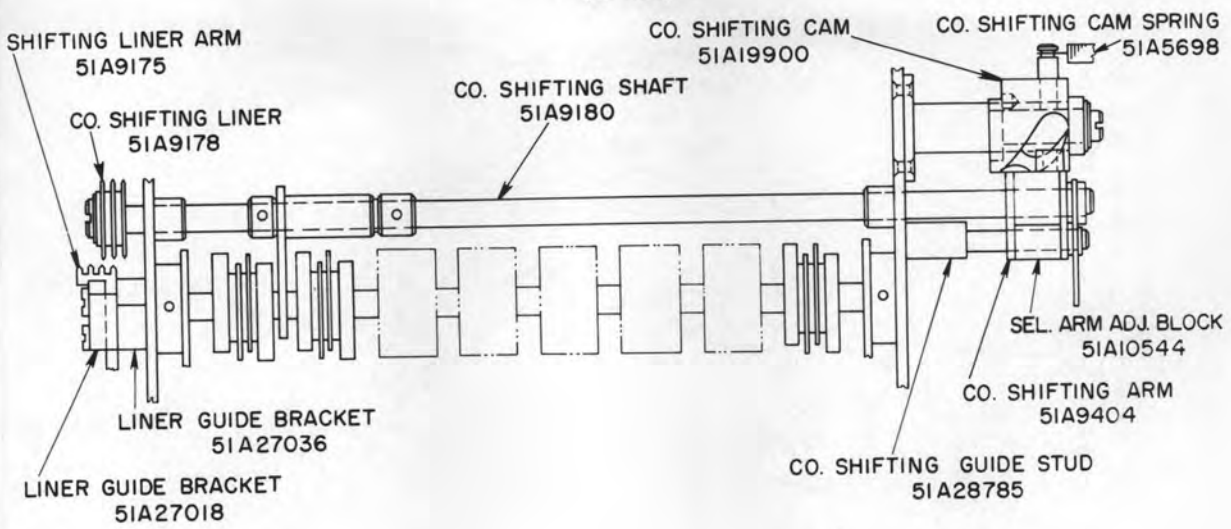
Through the connections of the Shifting Liner Link 51A13385, the Counter Shifting Liner 51A13391 will be moved down in back.

The front of the Counter Shifting Liner 51A13391 will move up in front and engage the Counter Shifting (Blade) Liner 51A13387, to align the Upper Counter for Reset Timing.

At 1/2 T.O.H., the Counter Shifting Liner Cam reverses the movement to the Counter Shifting Liners to disengage them.

The Counter Shifting Liners are engaged again at 3/4 T.O.H., to align the Counters for addition, and remain engaged until 1-3/4 T.O.H. for transfers to be made.

LOWER COUNTER SHIFTING
(C-52)



LOWER COUNTER SHIFTING

There are three different methods of shifting the Lower Counter.

1. Manually - by pressing a Transaction Key.

2. Mechanically - during Machine operation.

3. Manually - by moving the unit lock lever.

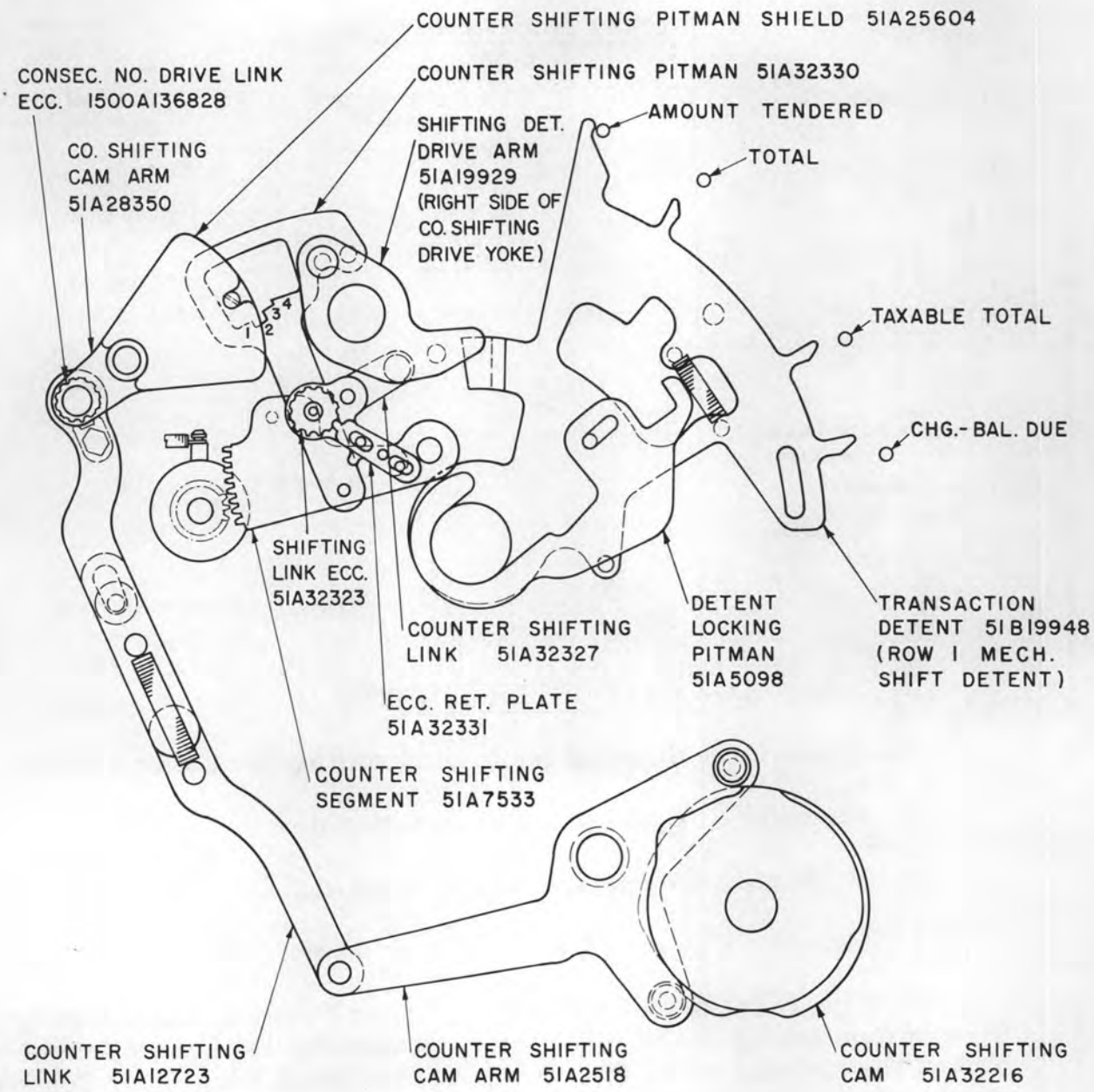
With the Unit Lock Lever in the Register Position, the Counter Shifting Cam Spring 51A5698 holds the Counter Shifting Cam top to the back. The raceway of the Cam holds the Counter Shifting Arm, Counter Shifting Shaft, and the Pinion Line to the left. In this position, the Taxable Itemizer Pinions will be in line with the Differential Segments.

Mechanical Shift - Item Operation

When either the Meat, Produce, Misc., Bakery, Tax Key or Grocery Motor Bar is used, the Counter Shifting Pitman will remain top to the front in its home position.

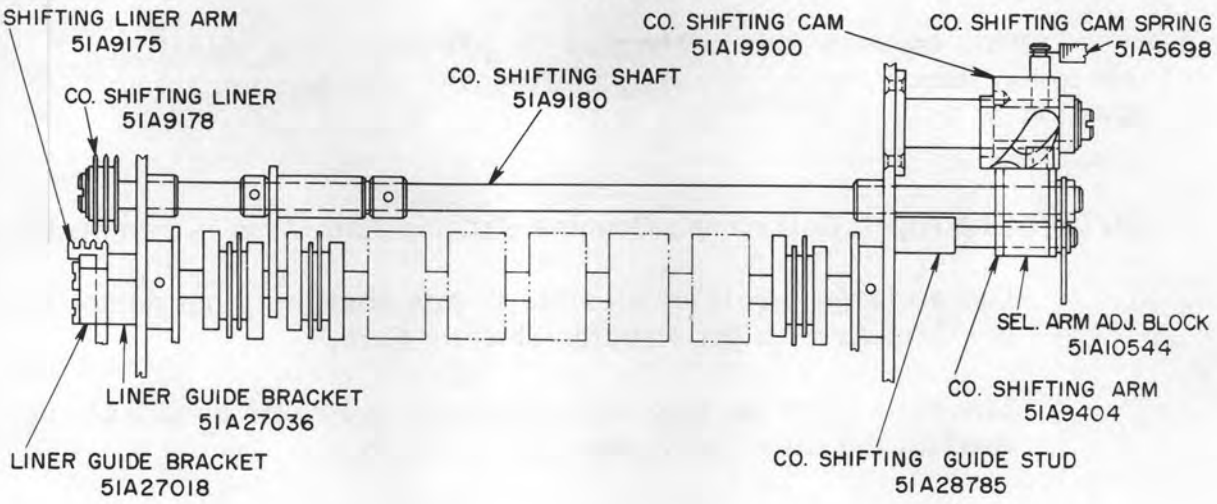
In this position, the #1 step of the pitman is under the stud in the Counter Shifting Cam Arm.

MECHANICAL SHIFT (LOWER COUNTER) C-52



At 1/2 T.O.H., the Counter Shifting Cam 51A32216 will move the Counter Shifting Cam Arm 51A2518 up in back. Through the connections of the Counter Shifting Link, the Counter Shifting Cam Arm 51A28350 will be moved down in front. The stud in this arm will contact the 1st step of the Counter Shifting Pitman and carry it and the Counter Shifting Segment down.

LOWER COUNTER SHIFTING
(C-52)



The Counter Shifting Cam will be turned top to the front and the Raceway in the Cam will move the Counter Shifting Shaft and Pinion Line to the right one position aligning the Plus Pinions with the Differential Segments.

The stud in the Counter Shifting Pitman will contact the Counter Shifting Pitman Stop preventing an overthrow to the Shifting Pitman, Shifting Segment and Pinion Line.

At 3/4 T.O.H., the Counter is engaged, for the amount indexed on the keyboard, to be added onto the plus pinions.

At 1 3/4 T.O.H., a high part of the Counter Shifting Cam will contact the upper roll and stud on the Counter Shifting Cam Arm 51A2518, and carry it up in front. Through the connections of the Counter Shifting Link, the Counter Shifting Cam Arm is moved up in front allowing spring tension to restore the Counter.

If, due to a bind, the Counter did not restore by spring tension, the Counter Shifting Cam Arm Stud would contact the top of the Counter Shifting Pitman and give it a "bump" to assist in restoring the Counter.

Immediately after the start of every operation, the Counter Shifting Cam Arm 51A28350 is carried up in front by a high part of the Counter Shifting Cam 51A32216.

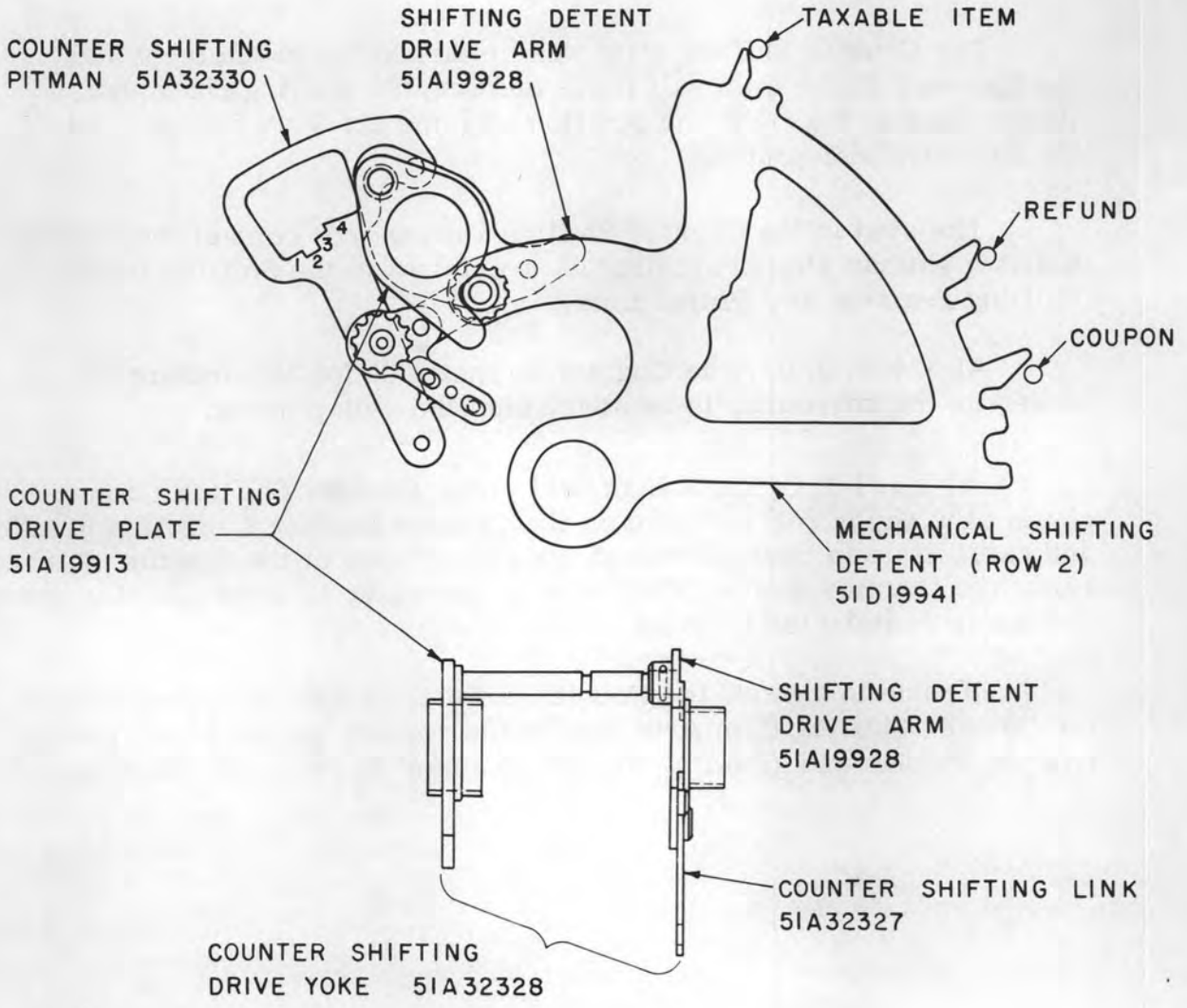
This movement is necessary, to prevent wrong selection, due to overthrow, when manually shifting the Counter more than 1 position.

NOTE: The upper Roll on the Counter Shifting Cam Arm is removable.

Use as large a roll as possible in this position , but do not bind the Cam Arm on the Counter Shifting Cam.

The rolls used for this adjustment are the same ones that are used on the Counter Engaging Cam Arms.

MECHANICAL SHIFT (ROW 2 CONTROL) C-52



Taxable Item

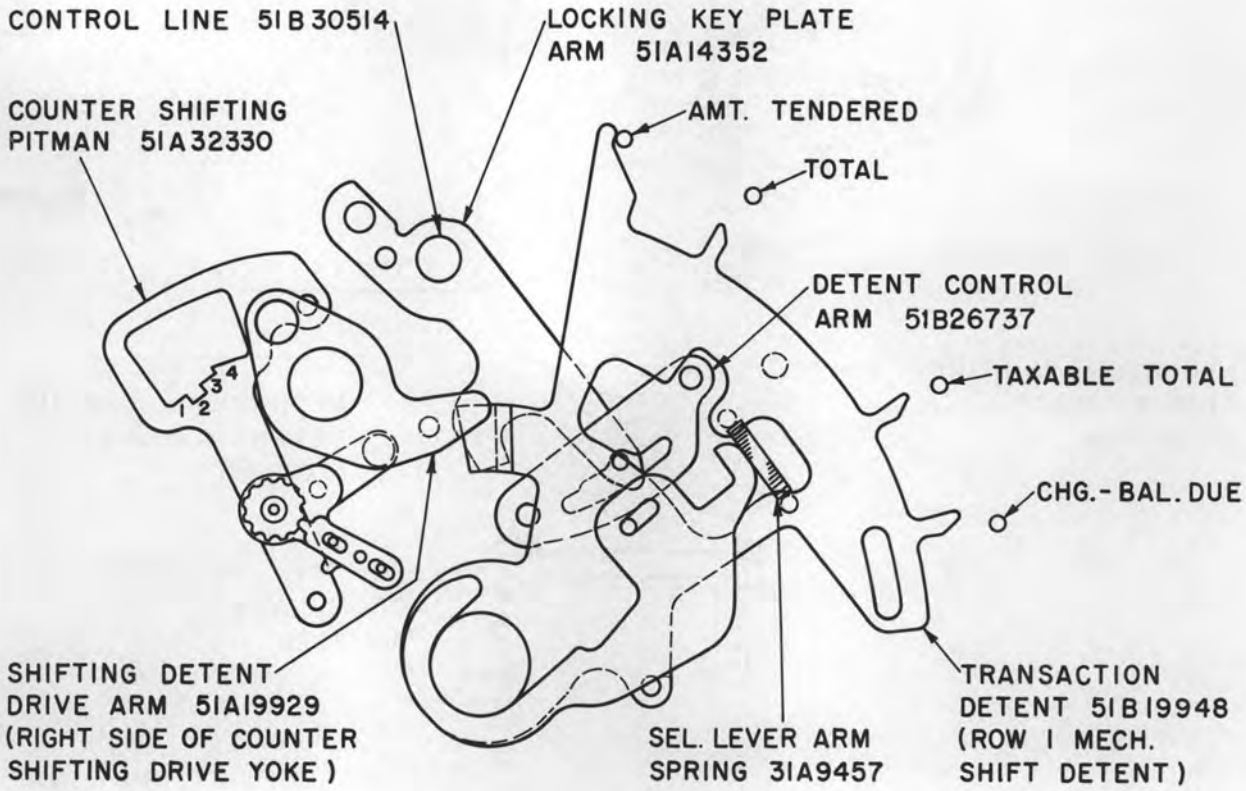
When the Taxable Item Key is pressed, the key pin will contact the top camming surface on the Row 2 Mechanical Shifting Detent 51D19941 and cam the Detent top to the back one position.

The eccentric located on a stud at the back of the detent, will contact the Counter Shifting Drive Yoke and carry it bottom to the back.

The right side of the Drive Yoke is connected to the Counter Shifting Pitman and will move the Pitman top to the back one position placing the 2nd step under the stud in the Counter Shifting Cam Arm 51A28350.

The 2nd step of the Counter Shifting Pitman is cut out, so there will be no movement given the Pitman at 1/2 T.O.H. and the Counter will not be shifted.

Since the Counter does not shift on this operation, the amounts indexed on the keyboard will add to the Taxable Itemizer.



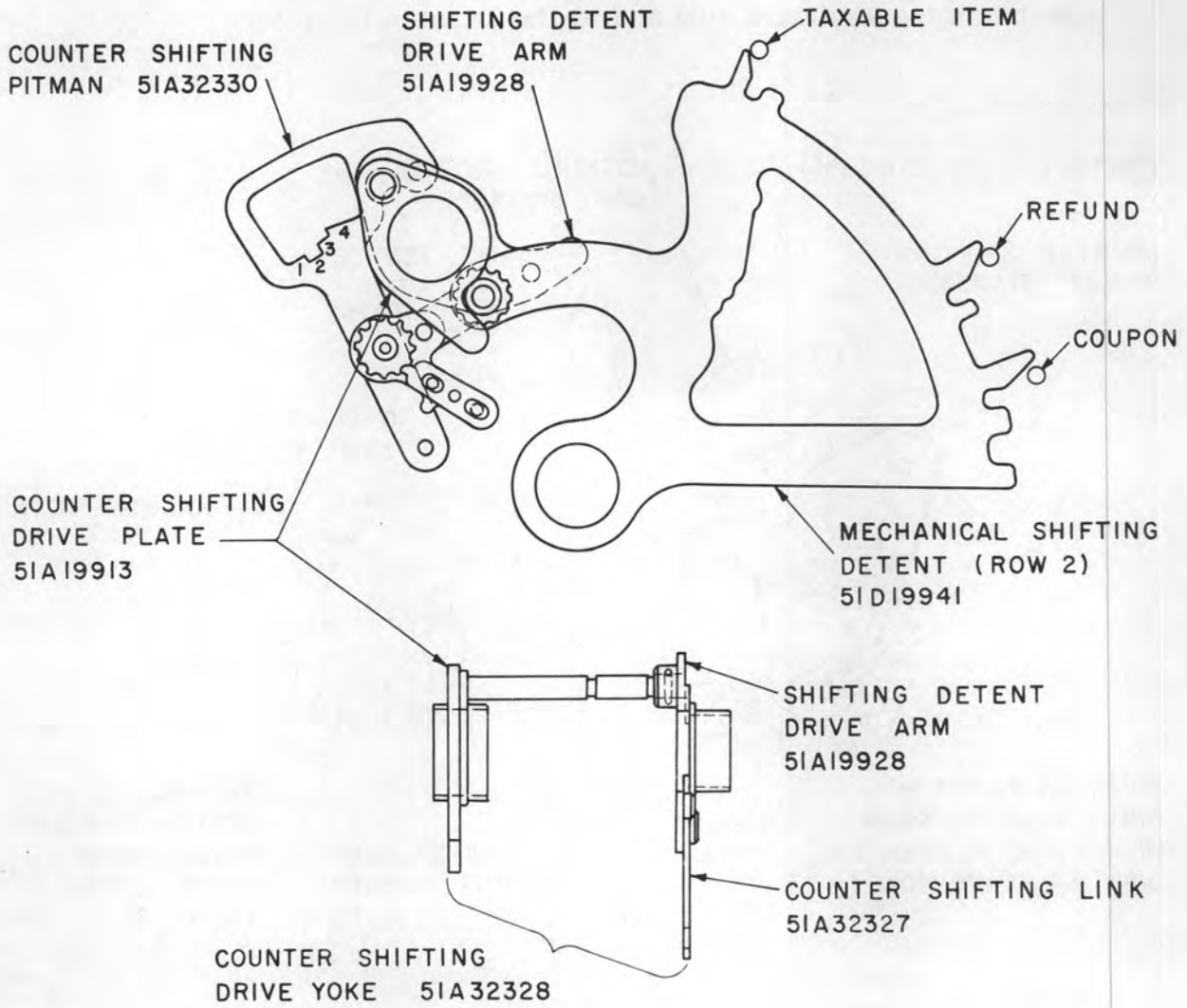
Taxable Total

When making a Taxable Total operation, it is desired to clear the Total from the Taxable Itemizer and add this amount to the Plus Pinions of the Crossfooter.

To accomplish this, the Counter Shifting Pitman is left in the home position with the 1st step under the Counter Shifting Cam Arm Stud.

The Counter will now be shifted at 1/2 T.O.H. in the same manner as on an Item Operation.

MECHANICAL SHIFT (ROW 2 CONTROL) C-52



Refund and Coupon Operation

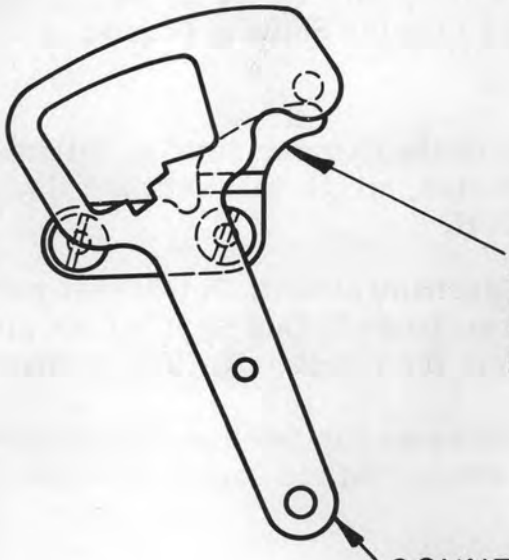
When either the Refund or Coupon keys are used, the Row 2 Mechanical Shifting Detent 51D19941 will be moved top to the back two positions.

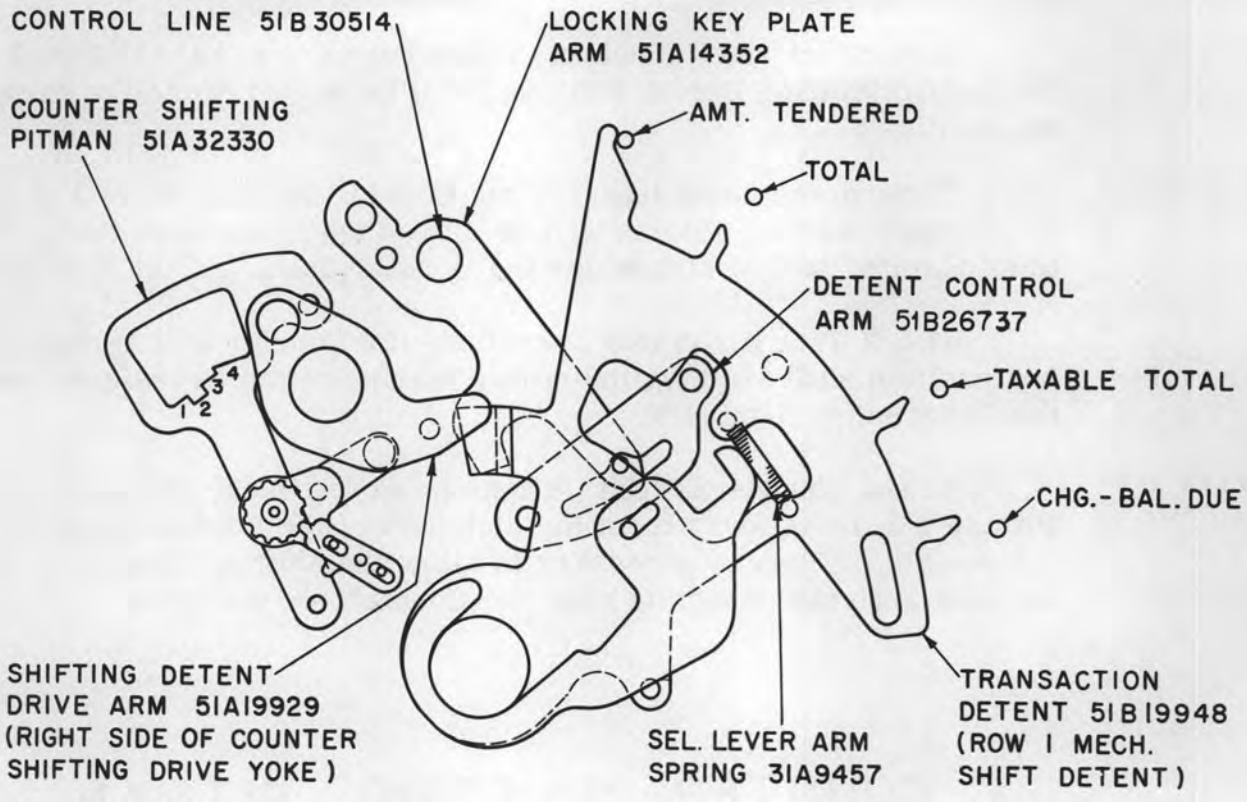
Through the connections of the Counter Shifting Drive Yoke, the Counter Shifting Pitman will be moved top to the back two positions placing the 3rd step under the Counter Shifting Cam Arm Stud.

At 1/2 T.O.H. on this operation, the Counter will receive a two position shift aligning the minus Pinions of the Crossfooter with the Differential Segments.

As the Counter Shifting Pitman is moved back, the stud in the Pitman will move away from the high part of the Counter Shifting Pitman Stop. This is necessary to allow the Shifting Pitman to be carried down far enough to shift the Counter two positions.

COUNTER SHIFTING PITMAN & STOP (C-52)




CONTROL LINE 51B30514
LOCKING KEY PLATE ARM 51A14352
COUNTER SHIFTING PITMAN 51A32330
AMT. TENDERED
TOTAL
DETENT CONTROL ARM 51B26737
TAXABLE TOTAL
CHG.-BAL. DUE
1 2 3 4
SHIFTING DETENT DRIVE ARM 51A19929 (RIGHT SIDE OF COUNTER SHIFTING DRIVE YOKE)
SEL. LEVER ARM SPRING 31A9457
TRANSACTION DETENT 51B19948 (ROW 1 MECH. SHIFT DETENT)

Amount Tendered

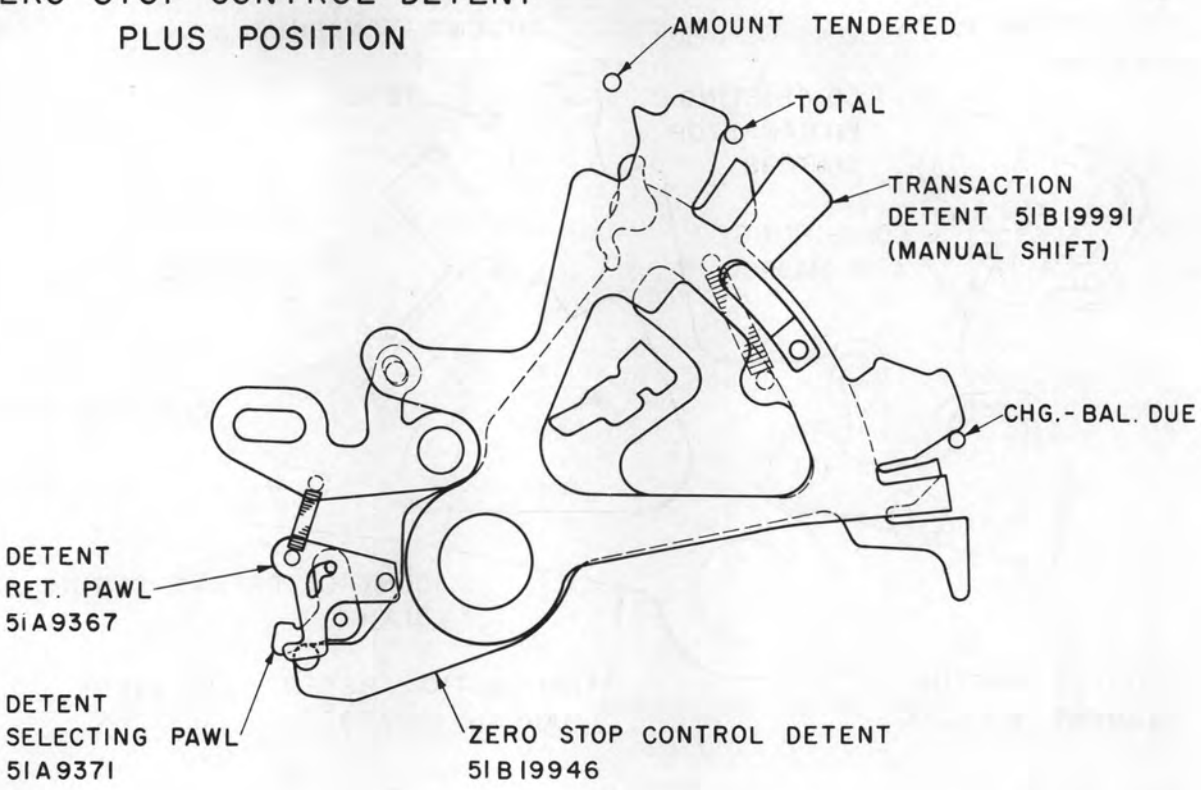
When the Amount Tendered key is used, the key pin will cam the Row 1 Mechanical Shift Detent 51B19948 top to the back. The back extension of this Detent will contact a stud in the Shifting Detent Drive Arm and carry it and the Counter Shifting Pitman to the back two positions.

This places the 3rd step of the Counter Shifting Pitman under the Counter Shifting Cam Arm Stud, which will shift the Counter to the Minus position at 1/2 T. O. H.

The projections on the Mechanical Shift Detent that work with the Total, Tax Total and Change Balance Due Keys do not give enough movement to the Detent to affect the Counter Shifting Pitman.

These projections are necessary to latch up the Detent Locking Pitman when Row 1 keys are used. This is explained under the Lock Out Section.

ZERO STOP CONTROL DETENT
PLUS POSITION



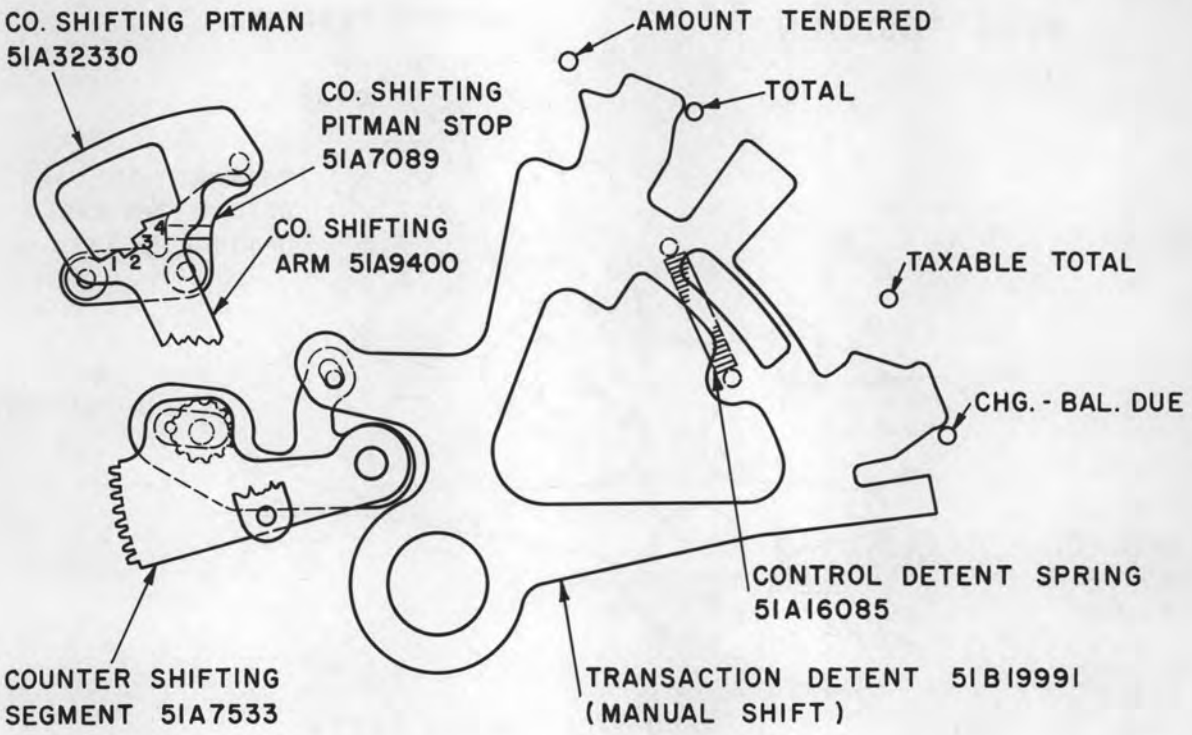
MANUAL SHIFT

Total And Change Balance Due

The position that the Counter is shifted to by these two keys is determined by the position of the Zero Stop Control Detent.

If the overdraft line was last tripped on a plus operation, the Zero Stop Control Detent will be down in front and the two projections on the Detent will be below the key pins of the Total and Change Balance Due Keys.

MANUAL SHIFT (LOWER COUNTER) C-52



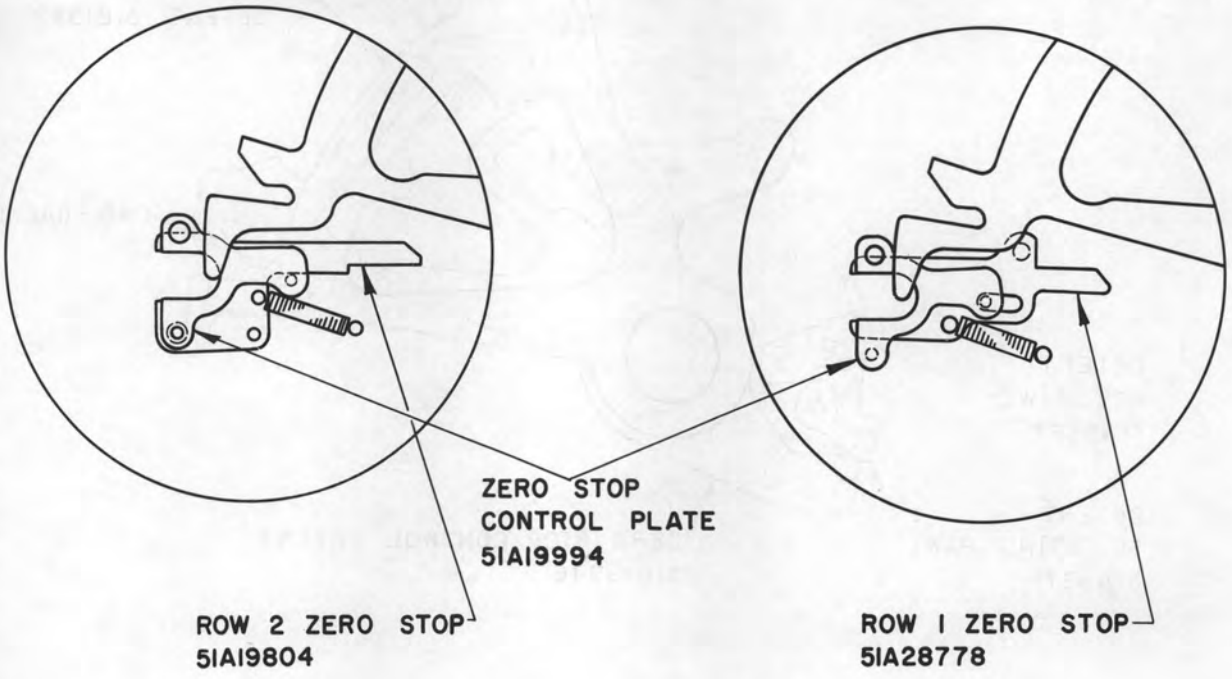
When the Total or Change Balance Due key is pressed, the Key Pin will contact the camming surface of the Manual Shift Detent 51B19991 and cam it up in front. The extension on the back of this detent is connected to the Counter Shifting Arm which is around an eccentric on the Counter Shifting Segment.

As the Manual Shift Detent 51B19991 moves down in back, the Counter Shifting Segment will be carried down shifting the Counter to the Plus Position.

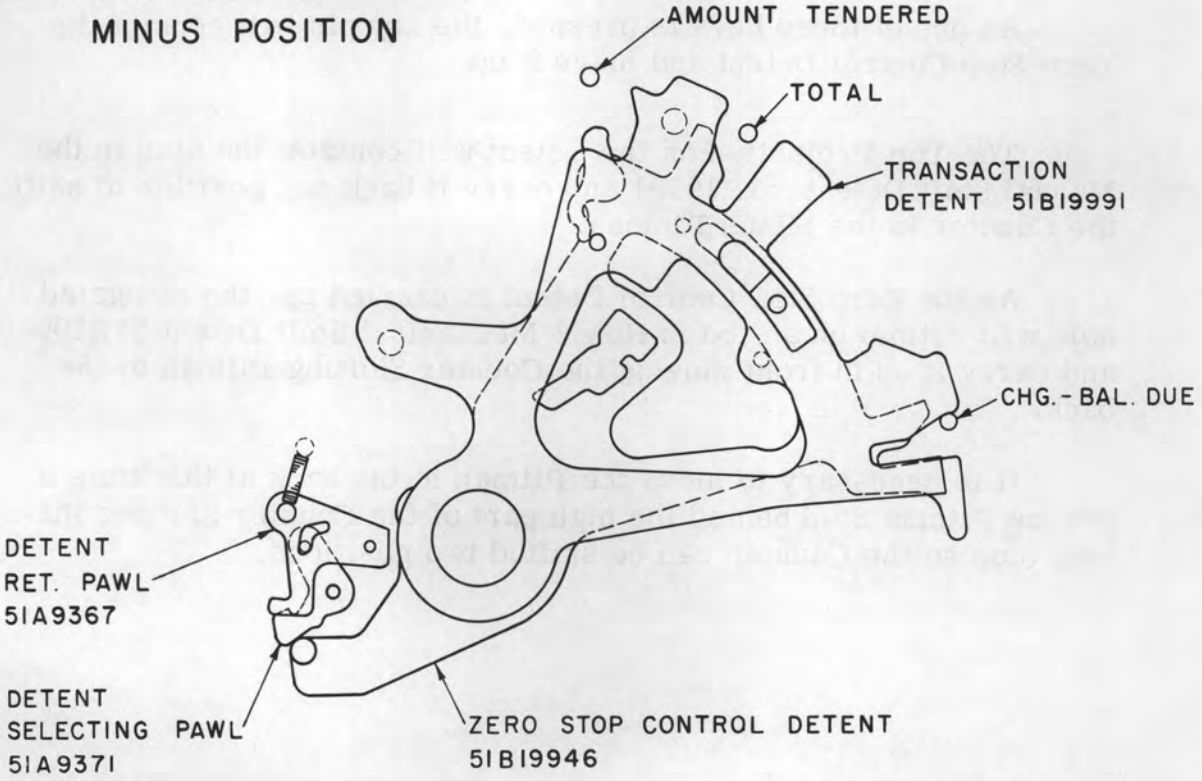
Since no movement is given the Zero Stop Control Detent, it will remain down in front with the lower extension in path of the Zero Stop Control Plate.

This will hold both Row 1 and Row 2 Zero Stops to the front, leaving Row 1 Segment free to move up to the key pressed to print and indicate Total or Balance Due.

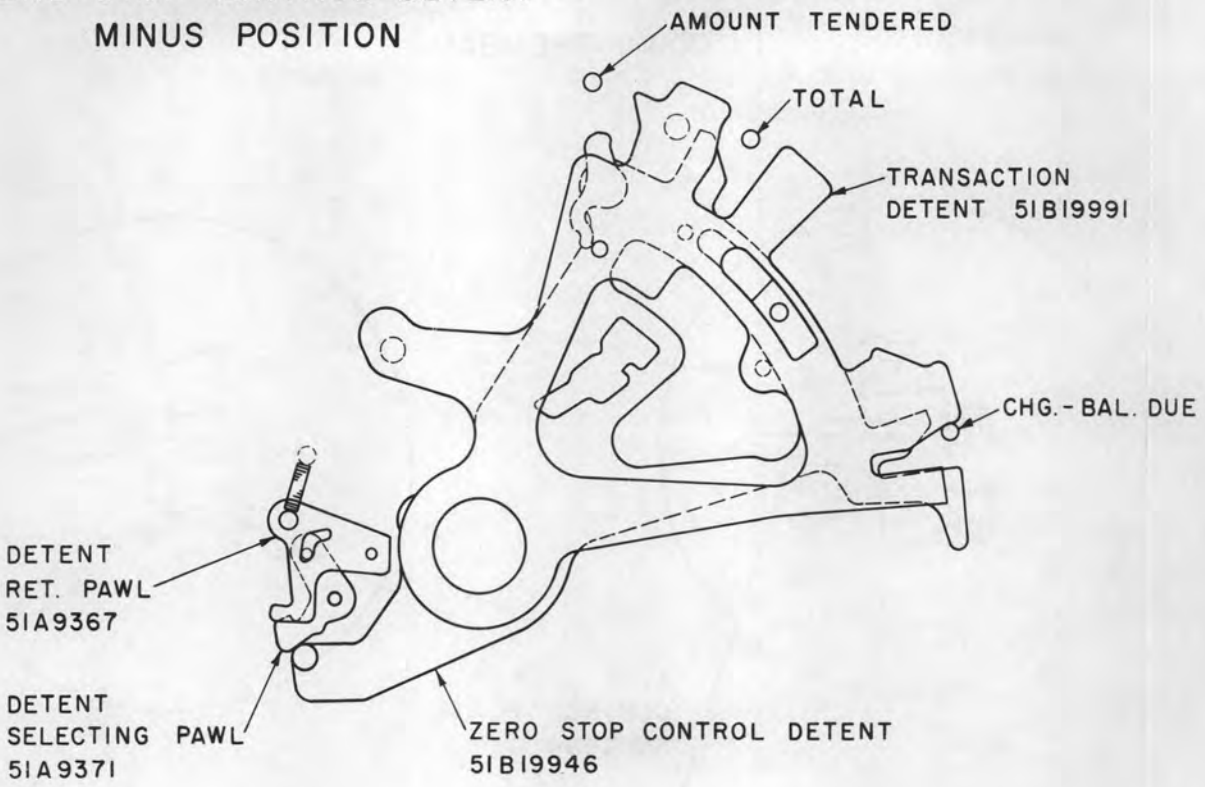
ZERO STOP CONTROL DETENT
DOWN THE BANK



ZERO STOP CONTROL DETENT
MINUS POSITION



ZERO STOP CONTROL DETENT MINUS POSITION



When the Overdraft Line is tripped on a minus operation, the Zero Stop Control Detent will be moved up in front placing the two projections above the key pins of the Total and Change Balance due key.

As one of these keys is pressed, the key pin will contact the Zero Stop Control Detent and move it up.

The Top Projection on the Detent will contact the stud in the Manual Shift Detent 51B19991 and carry it back two position to shift the Counter to the Minus Pinions.

As the Zero Stop Control Detent is carried up, the elongated hole will bottom on a stud in Row 1 Mechanical Shift Detent 51B19948 and carry it up in front moving the Counter Shifting Pitman to the back.

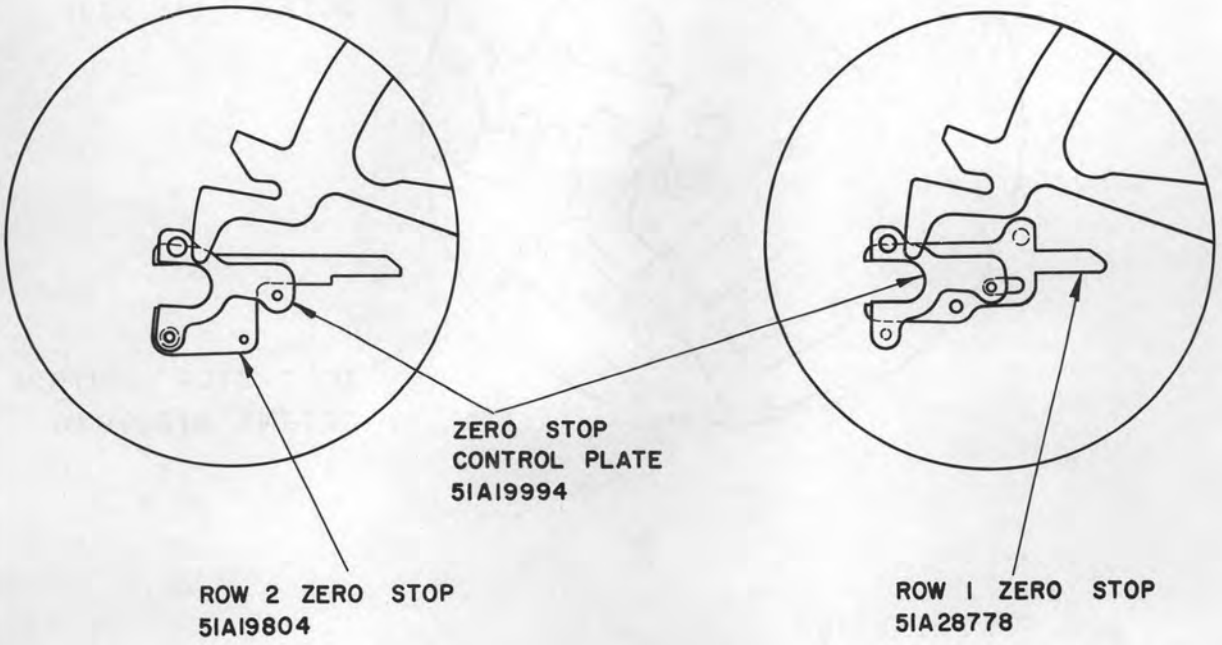
It is necessary to move the Pitman to the back at this time to get the Pitman Stud behind the high part of the Counter Shifting Pitman Stop so the Counter can be shifted two positions.

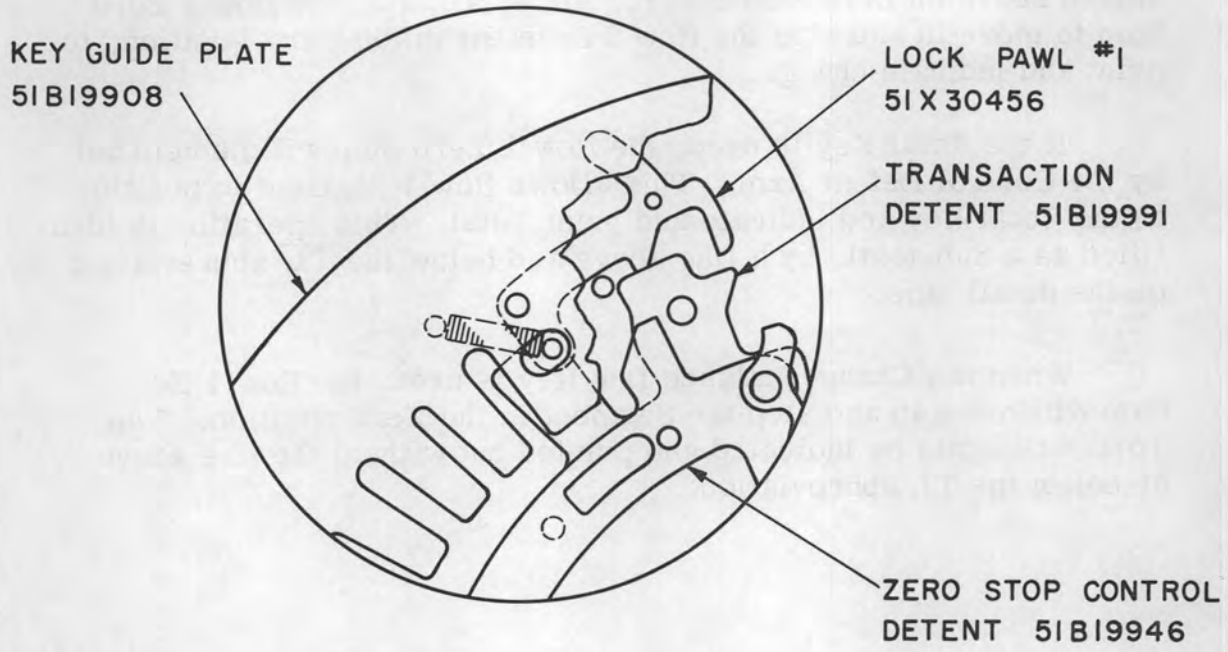
The Lower Extension of the Zero Stop Control Detent will be raised above theZero Stop Control Plate, allowing the Row 2 Zero Stop to move in and stop the Row 2 Segment in the Zero Position, to print and indicate change.

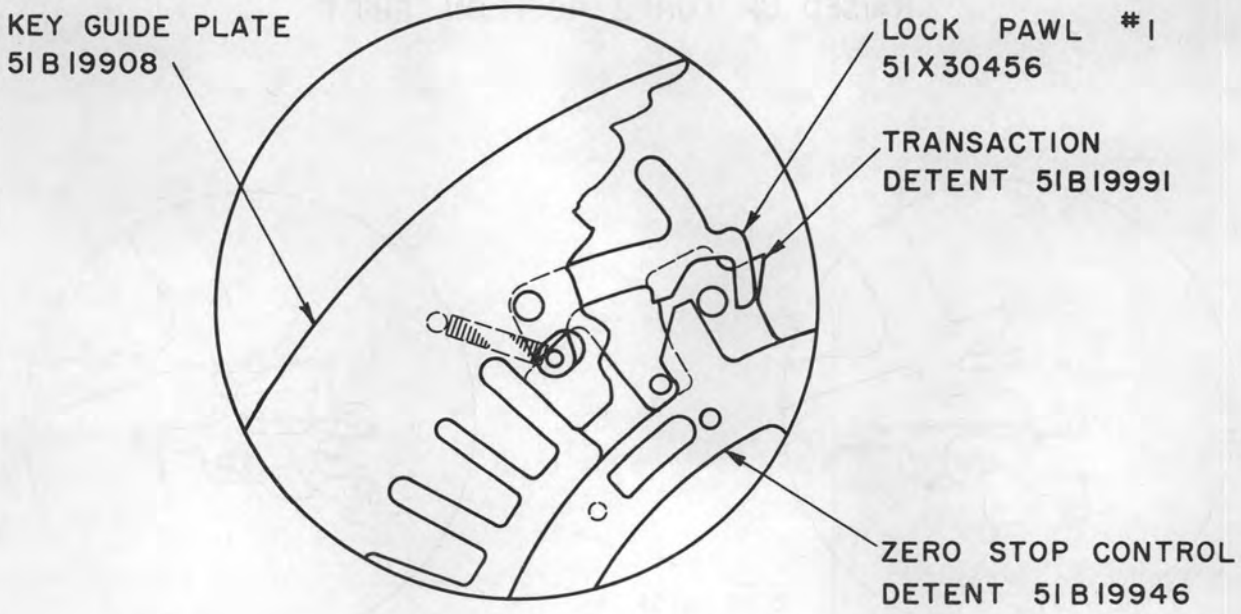
If the Total Key is used, the Row 1 Zero Stop will be held out by the Control Detent Arm. This allows Row 1 Segment to position to the Total Key and indicate and print Total. This operation is identified as a Sub-total, by a line above and below the $\overline{\text{TL}}$ abbreviation on the detail tape.

When the Change Balance Due Key is used, the Row 1 Zero Stop will move in and stop the Segment in the Zero position. The Total will again be indicated and printed but without the line above or below the TL abbreviation.

ZERO STOP CONTROL DETENT
RAISED UP FOR 2 POSITION SHIFT







Lock Pawl 51X30456

The Lock Pawl is used to prevent an overthrow to the Counter when shifting the Counter to the Minus position by the Total Key.

The Lock Pawl is swung on the Transaction Key Frame and held against the Total Key Pin by spring tension.

As the key is pressed, the hook part of the Lock Pawl moves down in path of the stud in the Manual Shift Detent. This stops the Detent after the Counter has shifted two positions, preventing an overthorw.

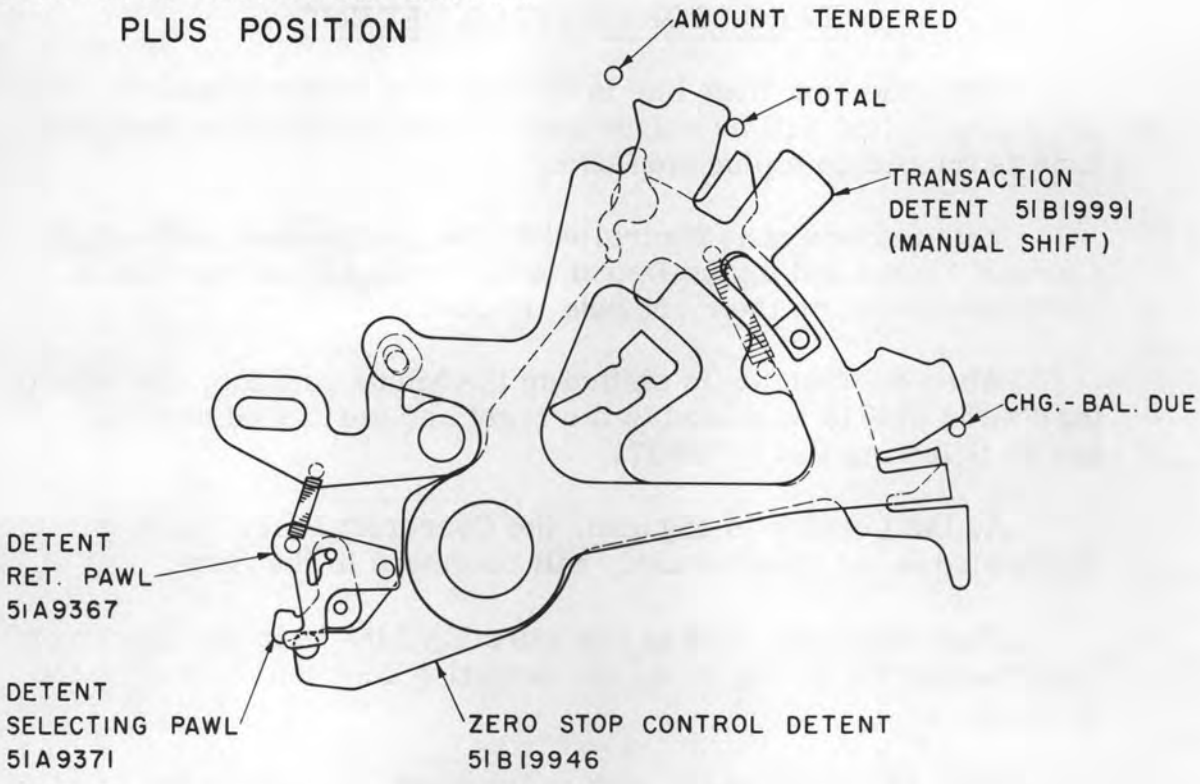
The Lock Pawl is available in the four sizes listed below:

51X30456	Lock Pawl	Number 1
51X30457	Lock Pawl	Number 2
51X30458	Lock Pawl	Number 3
51X37387	Lock Pawl	Number 4

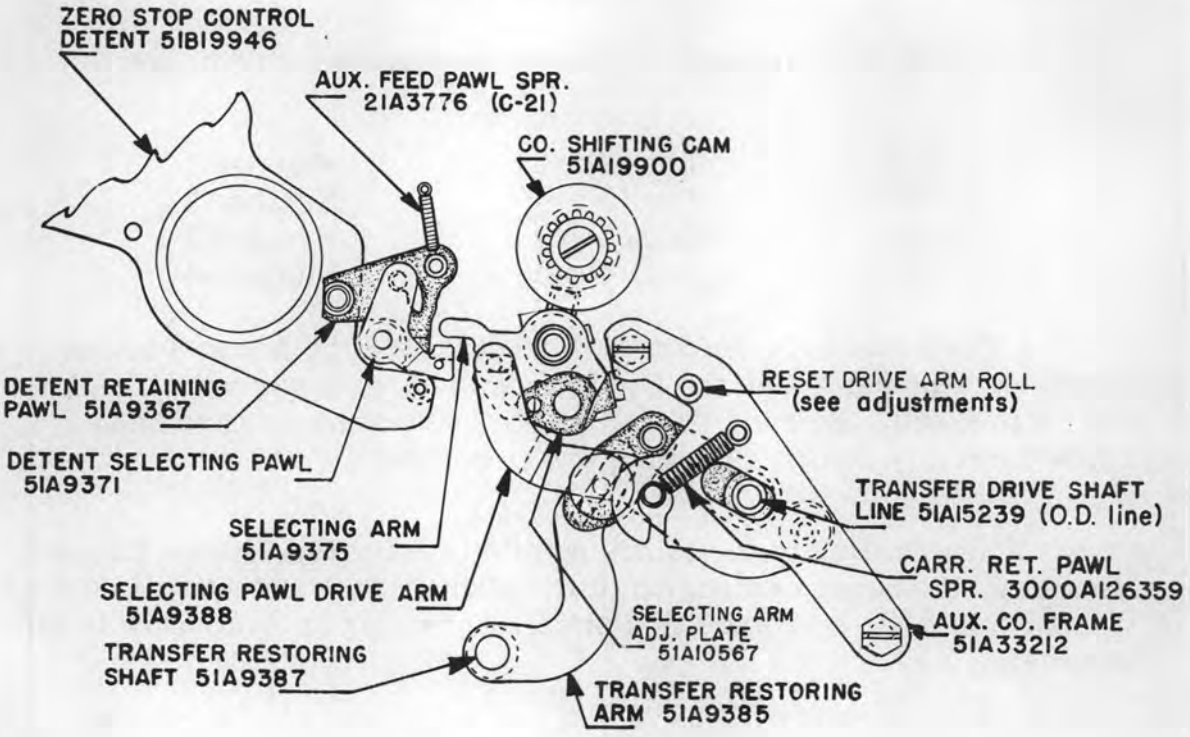
A Pawl should be selected which will hold the Minus Pinions in proper alignment with the Differential Segments when the Total Key is pressed. Be sure that all shifting adjustments have been made correctly before replacing the Lock Pawl.

When shifting to the Minus position, using the Change Balance Due Key, the bottom extension of the Manual Shift Detent will contact the key pin after a two position shift, preventing an overthrow to the counter.

ZERO STOP CONTROL DETENT
PLUS POSITION



O.D. & ZERO STOP CONTROL DETENT MECHANISM
(C-52)


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
SELECTING ARM 51A9375
SELECTING PAWL DRIVE ARM 51A9388
TRANSFER RESTORING SHAFT 51A9387
RESET DRIVE ARM ROLL (see adjustments)
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
CARR. RET. PAWL SPR. 3000A126359
AUX. CO. FRAME 51A33212
SELECTING ARM ADJ. PLATE 51A10567
TRANSFER RESTORING ARM 51A9385

ZERO STOP CONTROL DETENT

When the overdraft line is tripped on a minus operation, the Zero Stop Detent will be raised and retained up until the Overdraft Line is tripped on a plus operation.

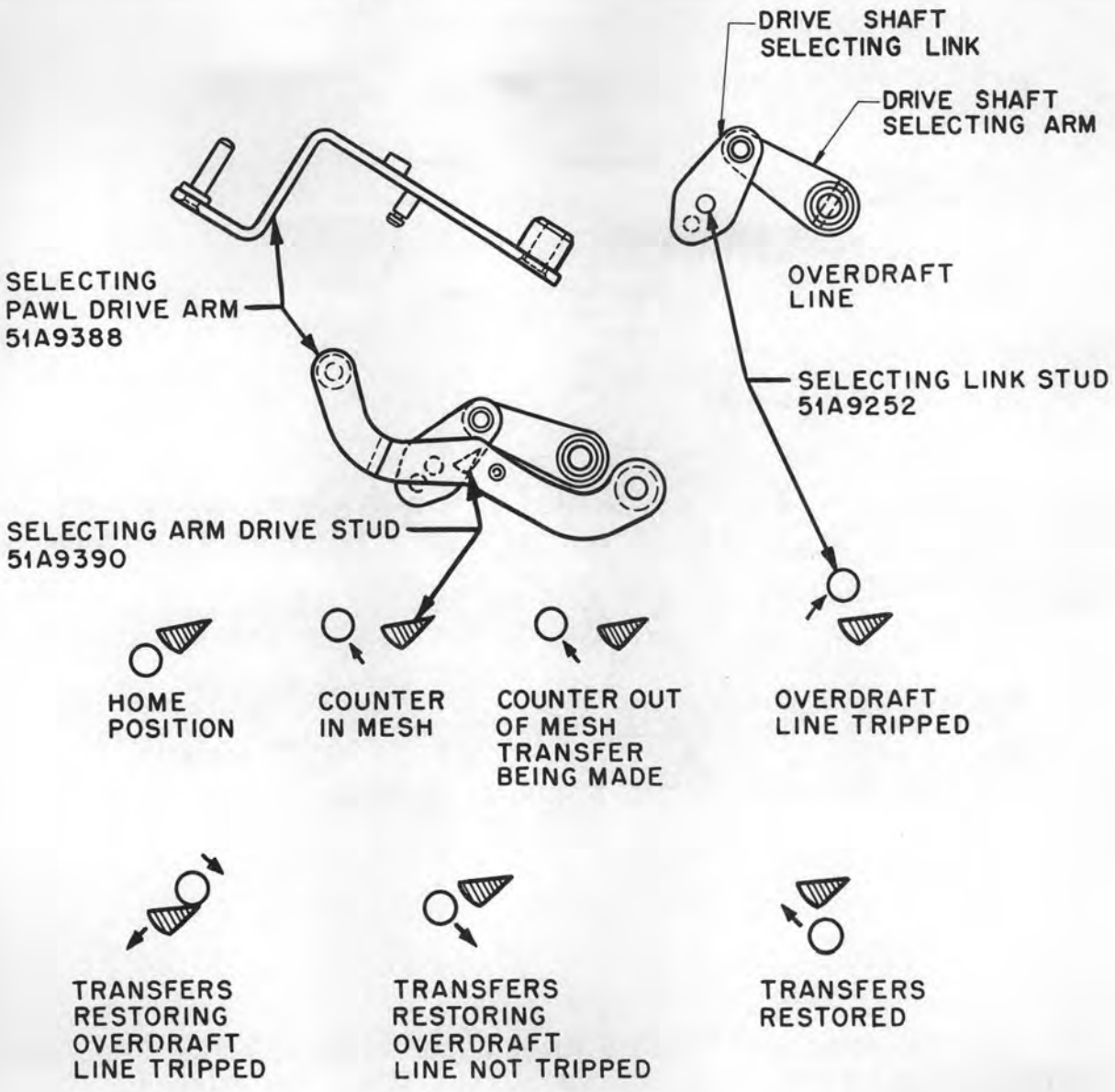
This movement is controlled by the mechanism on the right Counter Frame and by the Detent Selecting and Retaining Pawls, which are swung on the right Side Frame.

When the Counter is shifted to the Minus position, the Selecting Pawl 51A9375 is moved to the right and positioned over the Detent Selecting Pawl 51A9371.

As the Counter is engaged, the Overdraft Line, which is assembled in the Counter unit, will be moved to the front.

Since the lower stud in the Selecting Link is in the raceway of the Transfer Restoring Arm, the Selecting Link will be moved top to the front.

This will position the stud in the Selecting Link to the front of the Pie-Shaped Stud in the selecting Pawl Drive Arm.

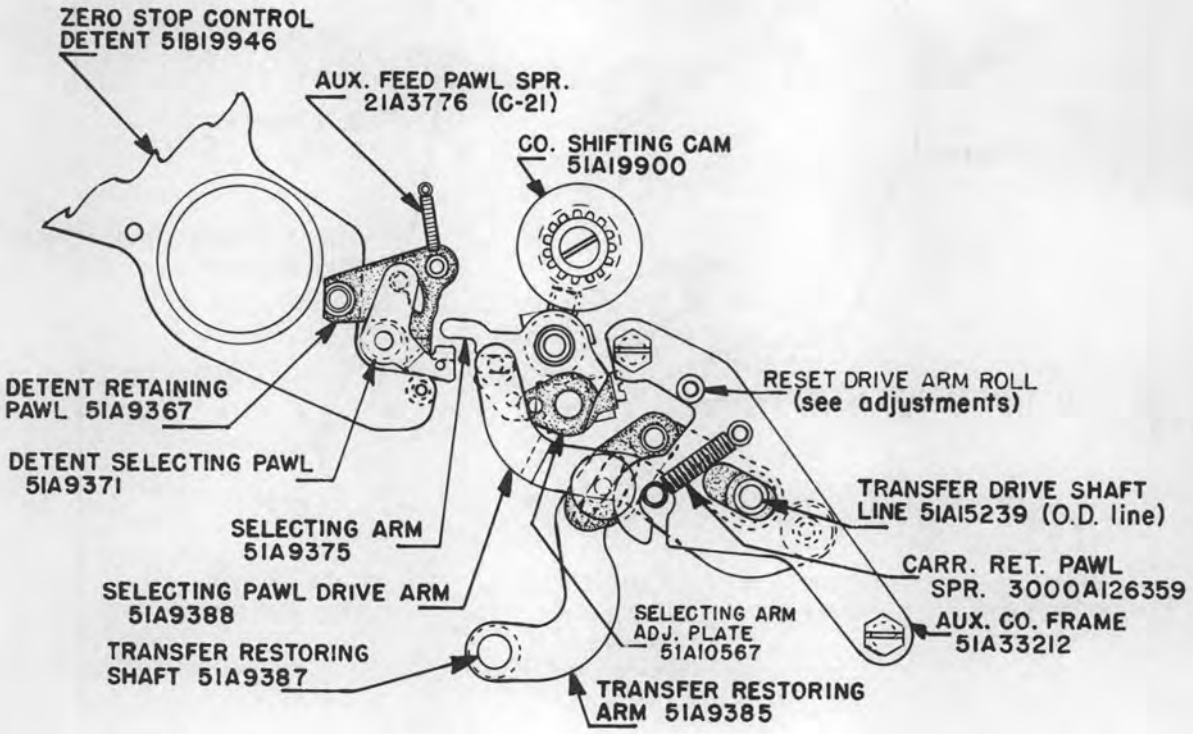

DRIVE SHAFT SELECTING LINK
DRIVE SHAFT SELECTING ARM
SELECTING PAWL DRIVE ARM 51A9388
OVERDRAFT LINE
SELECTING LINK STUD 51A9252
SELECTING ARM DRIVE STUD 51A9390
HOME POSITION
COUNTER IN MESH
COUNTER OUT OF MESH TRANSFER BEING MADE
OVERDRAFT LINE TRIPPED
TRANSFERS RESTORING OVERDRAFT LINE TRIPPED
TRANSFERS RESTORING OVERDRAFT LINE NOT TRIPPED
TRANSFERS RESTORED

The Selecting Link will be moved top to the back as the Counter is disengaged. At the same time, the Transfer Restoring Arm moves to the front which carries the bottom of the Selecting Link to the front keeping its stud in front of the Pie-Shaped Stud in the Selecting Pawl Drive Arm.

When the Counter is fully out of mesh, the Overdraft Line will be tripped top to the back. This carries the Selecting Link up and places its stud above the camming surface of the Pie-Shaped Stud.

From 1-1/2 to 1-3/4 T. O. H., as the Transfers restore, the Transfer Restoring Arm will move the Selecting Link bottom to the back. As the Selecting Link Stud moves back, it will contact the Pie-Shaped Stud in the Selecting Pawl Drive Arm. When this happens, the Selecting Link will move up slightly until a Stud in the Drive Shaft Selecting Arm contacts the Roll on the Auxiliary Counter Frame. This stops the upward movement of the Selecting Link and forces it to move bottom to the back, camming the Selecting Pawl Drive Arm down in front.

O.D. & ZERO STOP CONTROL DETENT MECHANISM (C-52)


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
SELECTING ARM 51A9375
SELECTING PAWL DRIVE ARM 51A9388
TRANSFER RESTORING SHAFT 51A9387
RESET DRIVE ARM ROLL (see adjustments)
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
CARR. RET. PAWL SPR. 3000A126359
AUX. CO. FRAME 51A33212
SELECTING ARM ADJ. PLATE 51A10567
TRANSFER RESTORING ARM 51A9385

The Selecting Arm 51A9375 yokes a Stud in the Selecting Pawl Drive Arm and will be carried down in front. The front extension will contact the Detent Selecting Pawl and carry it down in back.

The Detent Selecting Pawl is over a Stud in the Zero Stop Detent and will carry it down in back and up in front.

As the Selecting Pawl moves top to the back, the small Stud will enter the vertical part of the Detent Retaining Pawl Raceway. When this happens, spring tension will pull the Retaining Pawl up in back, locking the Selecting Pawl in this position.

When the Transfers are fully restored, the Selecting Link Stud is moved to the back of the Pie-Shaped Stud and spring tension will restore the O. D. Line top to the front. Also, the Selecting Pawl Drive Arm is restored up in front placing the Pie-Shaped Stud above the Selecting Link Stud.

The Zero Stop Control Detent will remain raised until the Overdraft Line is tripped on a Plus Operation.

PLUS OPERATION

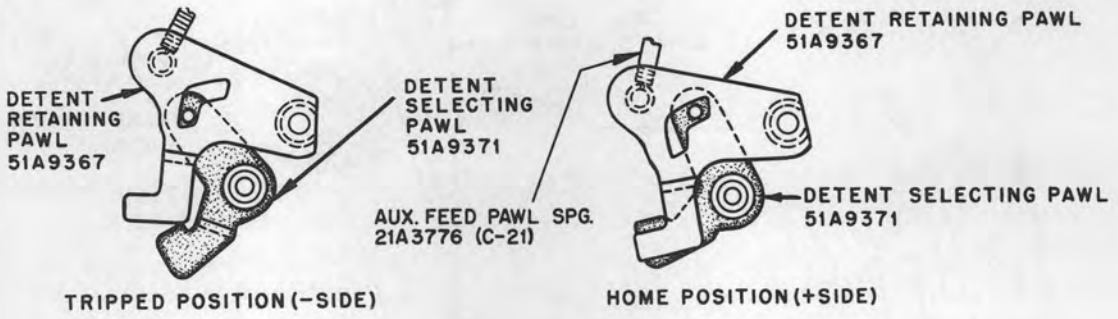
When the Counter is shifted to the Plus Position, the Selecting Arm will be positioned above the Detent Retaining Pawl.

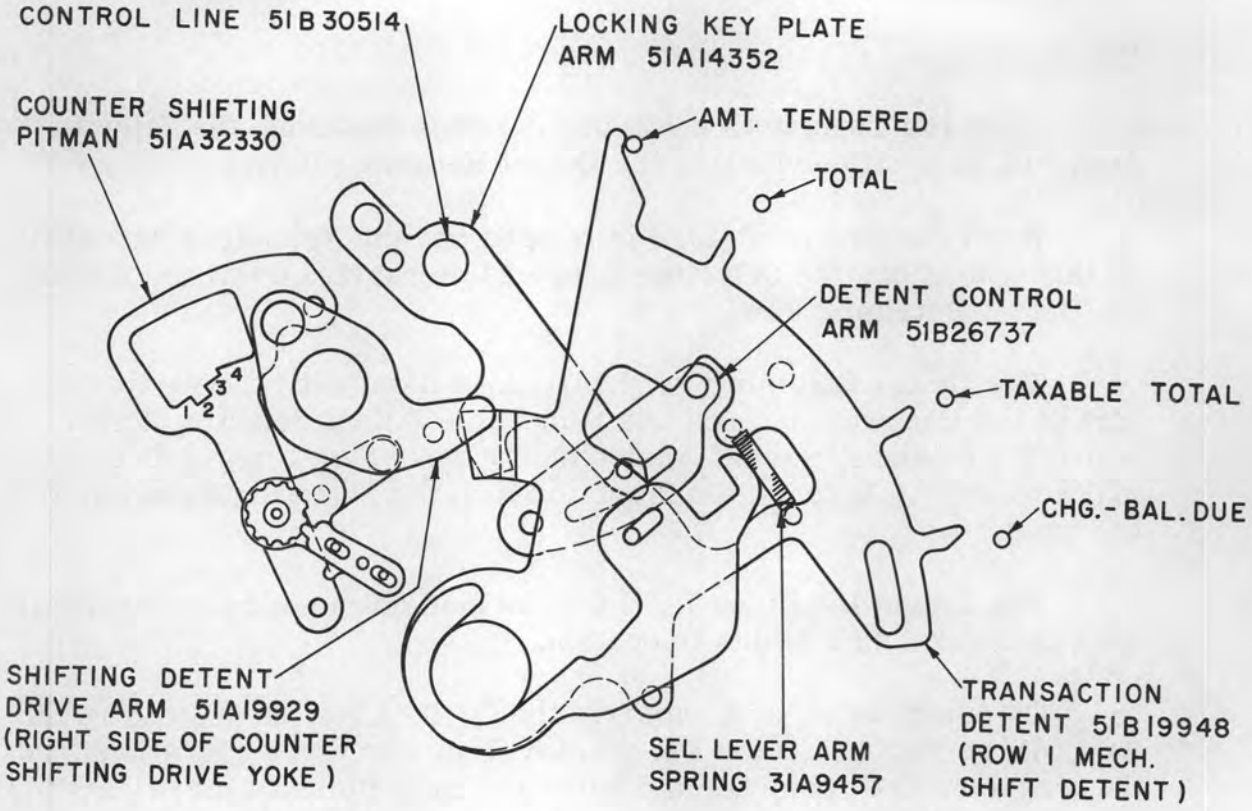
When the Overdraft Line is tripped and the Transfers restored on this operation, the Selecting Arm will be carried down and contact the Detent Retaining Pawl.

The Detent Retaining Pawl will move down until the vertical part of the Raceway is below the Stud in the Detent Selecting Pawl. When this happens, spring tension on the Zero Stop Control Detent will restore the Detent up in front and turn the Selecting Pawl top to the front.

The Detent Retaining Pawl will be held down until the Overdraft Line is tripped on a Minus Operation.

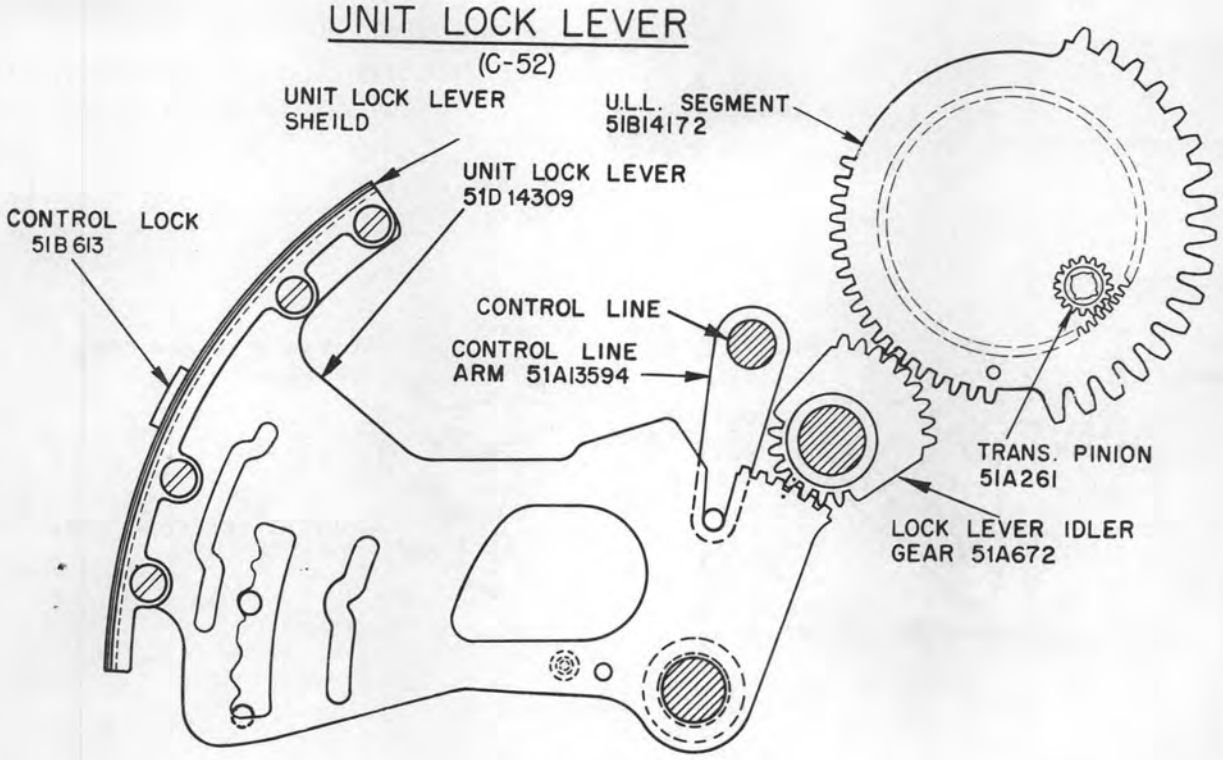
On operations that do not trip the O. D. Line, the Selecting Link Stud will remain below the Pie-Shaped Stud. On these operations, as the transfers are restored, the Selecting Link Stud will move under the Pie-Shaped Stud, giving no movement to the Selecting Pawl Drive Arm.


DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
AUX. FEED PAWL SPG. 21A3776 (C-21)
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
TRIPPED POSITION (-SIDE)
HOME POSITION (+SIDE)


CONTROL LINE 51B30514
LOCKING KEY PLATE ARM 51A14352
COUNTER SHIFTING PITMAN 51A32330
AMT. TENDERED
TOTAL
DETENT CONTROL ARM 51B26737
TAXABLE TOTAL
CHG.-BAL. DUE
1 2 3 4
SHIFTING DETENT DRIVE ARM 51A19929 (RIGHT SIDE OF COUNTER SHIFTING DRIVE YOKE)
SEL. LEVER ARM SPRING 31A9457
TRANSACTION DETENT 51B19948 (ROW 1 MECH. SHIFT DETENT)

UNIT LOCK LEVER

(C-52)



Unit Lock Lever Control

When the Unit Lock Lever is moved from Register to the Read Row 2 position, the Control Line will be turned top to the front.

The Locking Key Plate Arm will be carried down and the Stud in this Arm will cam the Detent Control Arm top to the back.

The Stud in the Detent Control Arm will move the mechanical Shift Detent and Manual Shift Detent up, shifting the Counter to the plus position.

As the Department Keys are read, the amounts will add into the Plus Pinions, giving the collective group.

When the Refund and Coupon Keys are used, the Counter Shifting Pitman will be carried to the back an additional position, placing the 3rd step under the Counter Shifting Cam Arm Stud.

This will give a one position shift at 1/2 T. O. H., to the Minus Position.

With the Unit Lock Lever in Reset Row 2, Minus, the lower counter remains shifted to the Plus Position but does not engage.

When the Unit Lock Lever is moved to Reset Row 2 Plus, or the Read group positions, the Mechanical and Manual Shift Detents are moved all the way up in front which will shift the Lower Counter to the Group Pinions.

When the Row 2 keys are cleared, the amounts are added into the Group Total.

ADJUSTMENTS

The Adjustments given below should be followed step-by-step if the Counter Unit is to be removed and disassembled.

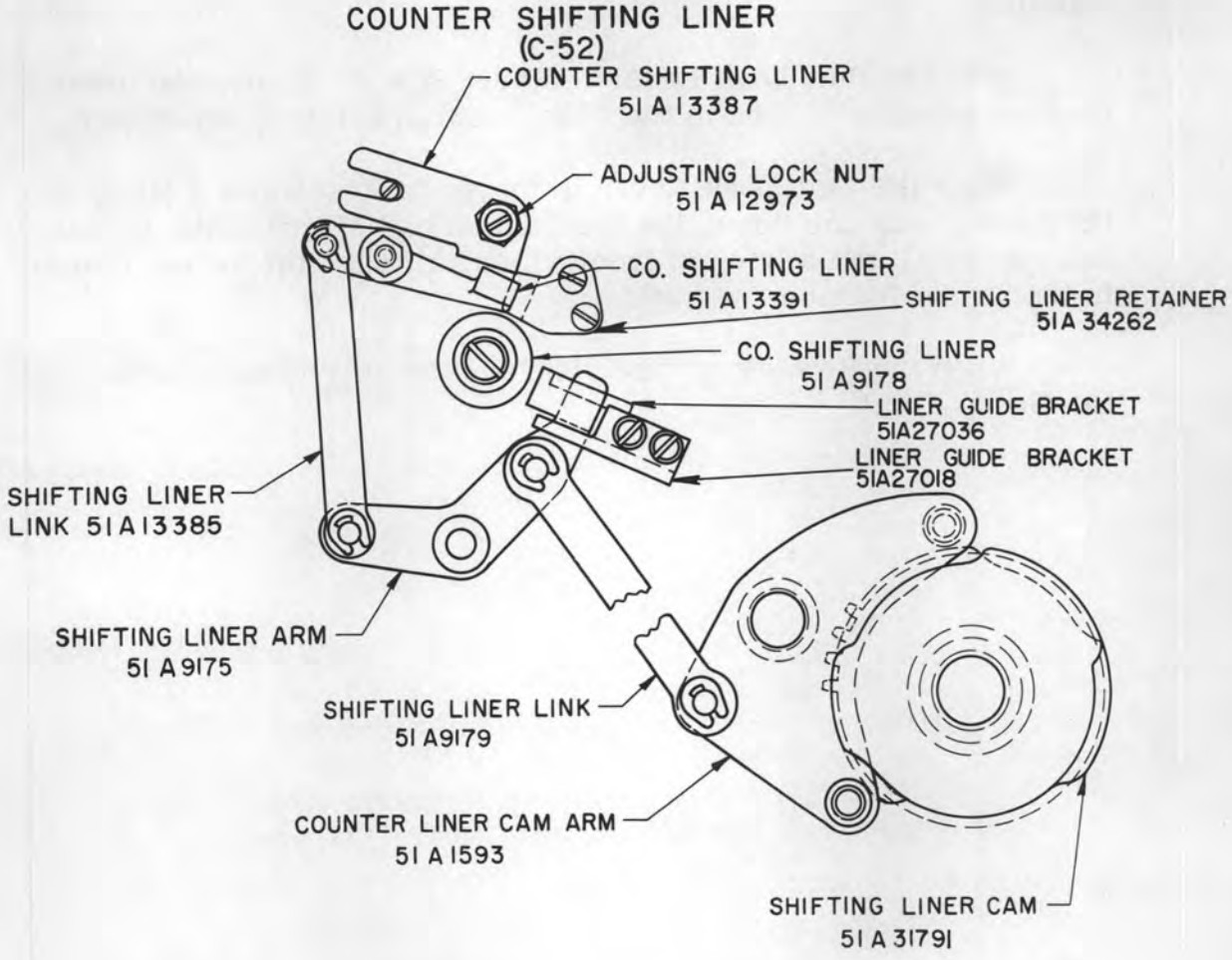
If it is desired to use only one or more of the adjustments to overcome a complaint, a complete understanding should be had of all the adjustments since changing one adjustment may affect another.

Step 1

1. Before removing the Counter, operate the machine to 1/4 T. O. H. and see that the Counter Shifting Liner Arms are carried deep enough into the Shifting Liners.

   (a) Should have a safe hold, 1/3 to 2/3 deep. Make note of any adjustment needed and repair after Counter is removed.

   (b) To adjust Liner Arms deeper into the Liners, peen the Shifting Liner Link 51A9179.

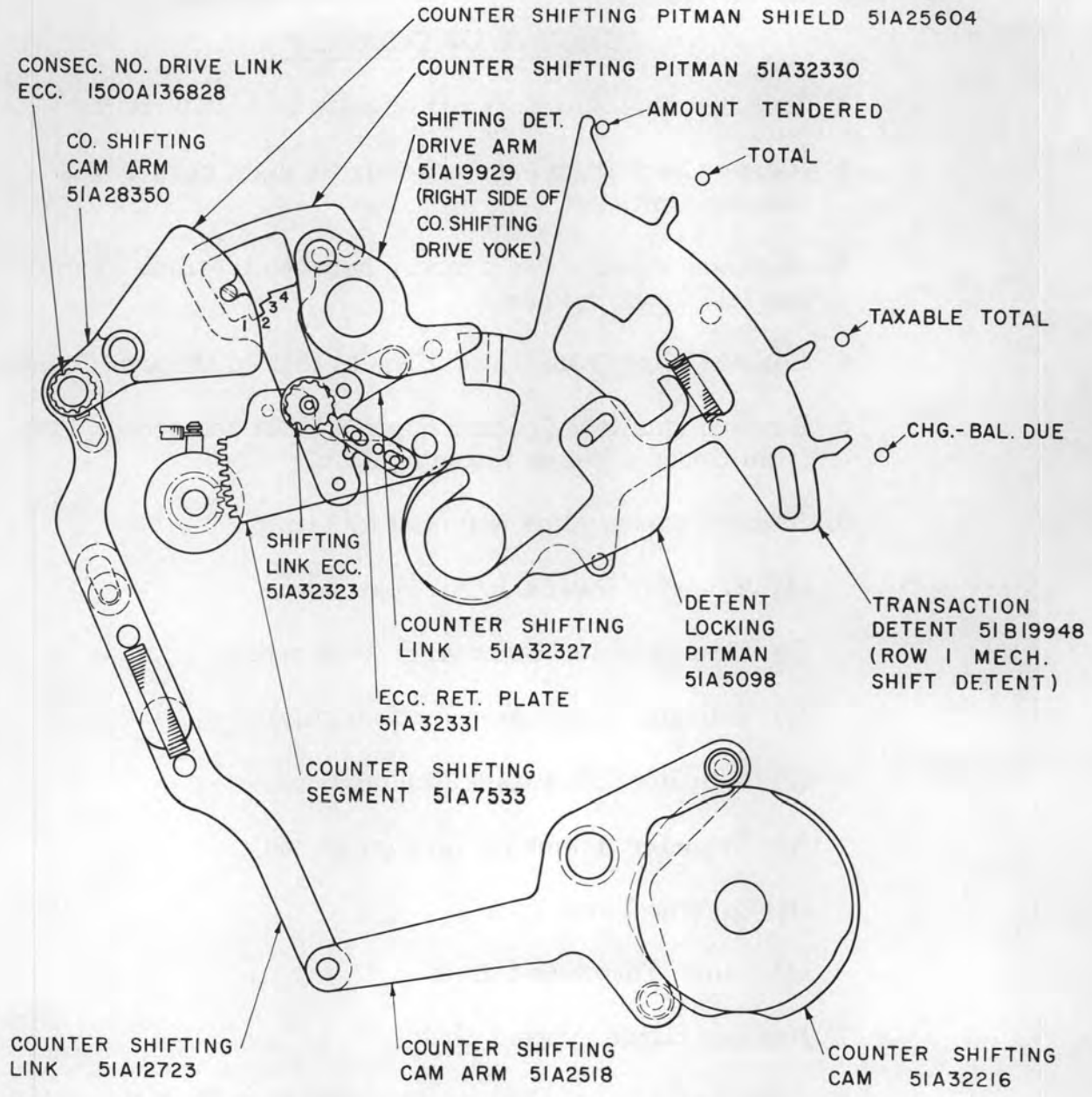


Step 2

REMOVAL OF COUNTER

1. Trip machine (any key) and operate to 1/16 T. O. H.
2. Remove back frame and brace from right corner of Counter Unit.
3. Mark and remove two spacers between left Side Frame and left Counter Frame.
4. Remove clips from Support Shafts that go through Counter.
5. Remove smallest Counter Support Shaft and unhook link from Upper Counter Engaging Arm.
6. Remove spring clips from the following:
   (a) Transfer Pawl Control Yoke Arm
   (b) Transmission Liner Arm (both ends)
   (c) Indicator Liner Arm (bottom only)
   (d) Indicator Liner Link (top only)
   (e) Transfer Restoring Link (rear end)
   (f) Counter Liner Link
   (g) Liner Throw-Out Link
7. Remove Large Support Shaft
8. Remove the Short Counter Engaging Arm Shaft through the Lower Printer Plate.
9. Remove Lower Counter Engaging Arm.
10. Remove Lower Counter Shifting Link (mechanical shift)
11. Remove Upper Counter Liner Blade Guide Screw.
12. Hold Counter and remove the Upper Shaft. Move Counter to the right and remove by pulling straight back.

MECHANICAL SHIFT (LOWER COUNTER) C-52



1. After the Counter is removed, check the following parts for excessive play.

All parts must be free but play should be held to a minimum.

(a) Counter Shifting Segment

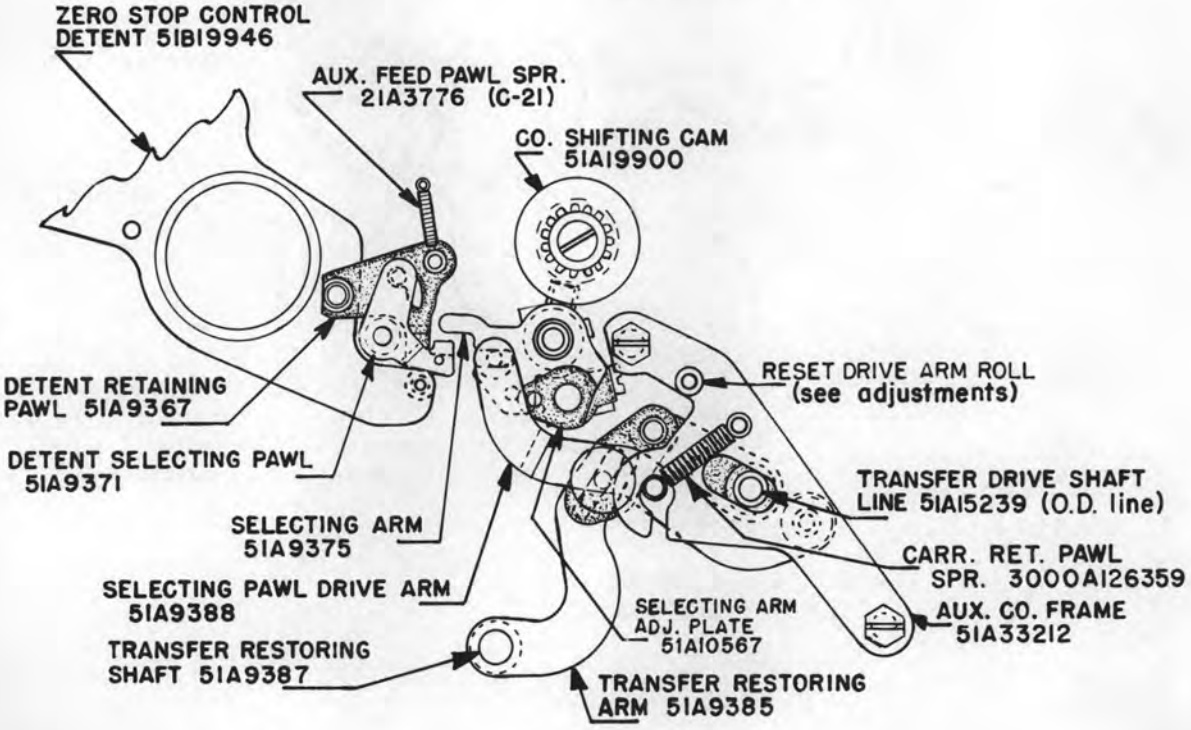
(b) Counter Shifting Arm

(c) Counter Shifting Pitman

(d) Counter Shifting Link

(e) Check Counter Shifting Pitman Stop for being loose.

If excessive play or wear is found where any of the above parts are swung, or connected, replace those parts.


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
SELECTING ARM 51A9375
SELECTING PAWL DRIVE ARM 51A9388
TRANSFER RESTORING SHAFT 51A9387
RESET DRIVE ARM ROLL (see adjustments)
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
CARR. RET. PAWL SPR. 3000A126359
AUX. CO. FRAME 51A33212
SELECTING ARM ADJ. PLATE 51A10567
TRANSFER RESTORING ARM 51A9385

2. Check Zero Stop Control Detent in the following manner:

(a) Push Detent Selecting Pawl down. It must have a full hold on the Stud in the Zero Stop Control Detent.

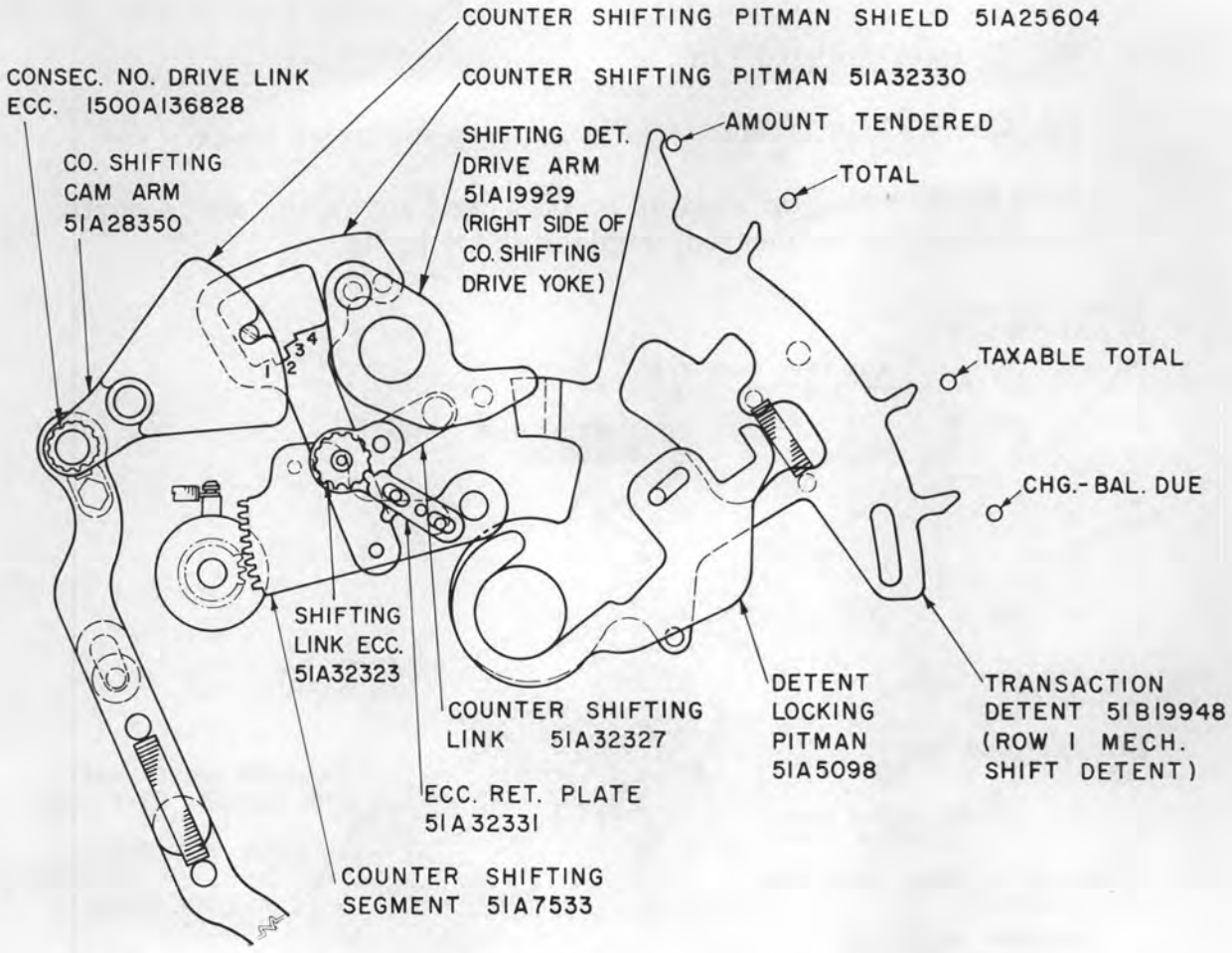
(b) Push Detent Retaining Pawl down. There must be clearance between the Pawl and Stud in the Zero Stop Control Detent.

To adjust, form the back extension of the Zero Stop Control Detent to the right or left to satisfy the above test.

(c) Trip the Key Lock Line using a key in Row 2. Push the Zero Stop Control Detent down in back and allow it to restore slowing. It must restore on a sneak test.

NOTE:

It may be necessary to stone the lower front end of the Zero Stop Control Detent where the Stud in the Zero Stop Control Plate rides the face of the Detent.


COUNTER SHIFTING PITMAN SHIELD 51A25604
CONSEC. NO. DRIVE LINK ECC. 1500A136828
COUNTER SHIFTING PITMAN 51A32330
AMOUNT TENDERED
SHIFTING DET. DRIVE ARM 51A19929 (RIGHT SIDE OF CO. SHIFTING DRIVE YOKE)
TOTAL
CO. SHIFTING CAM ARM 51A28350
TAXABLE TOTAL
CHG.-BAL. DUE
SHIFTING LINK ECC. 51A32323
COUNTER SHIFTING LINK 51A32327
DETENT LOCKING PITMAN 51A5098
TRANSACTION DETENT 51B19948 (ROW I MECH. SHIFT DETENT)
ECC. RET. PLATE 51A32331
COUNTER SHIFTING SEGMENT 51A7533

Step 3

1. Remove the Shield from the Counter Shifting Cam Arm 51A28350 and trip the machine with the Amount Tendered key.

   (a) Hold play out of the Counter Shifting Segment up in back and push the Counter Shifting Cam Arm down in front. The Stud should contact the third step of the Counter Shifting Pitman.

   (b) Make this same test holding play out of the Counter Shifting Pitman top to the back and the Counter Shifting Cam Arm Stud should not "Nip" the 4th step of the Counter Shifting Pitman. The clearance at this point should be held at a minimum.

   To adjust for this condition, use the Shifting Link Eccentric.

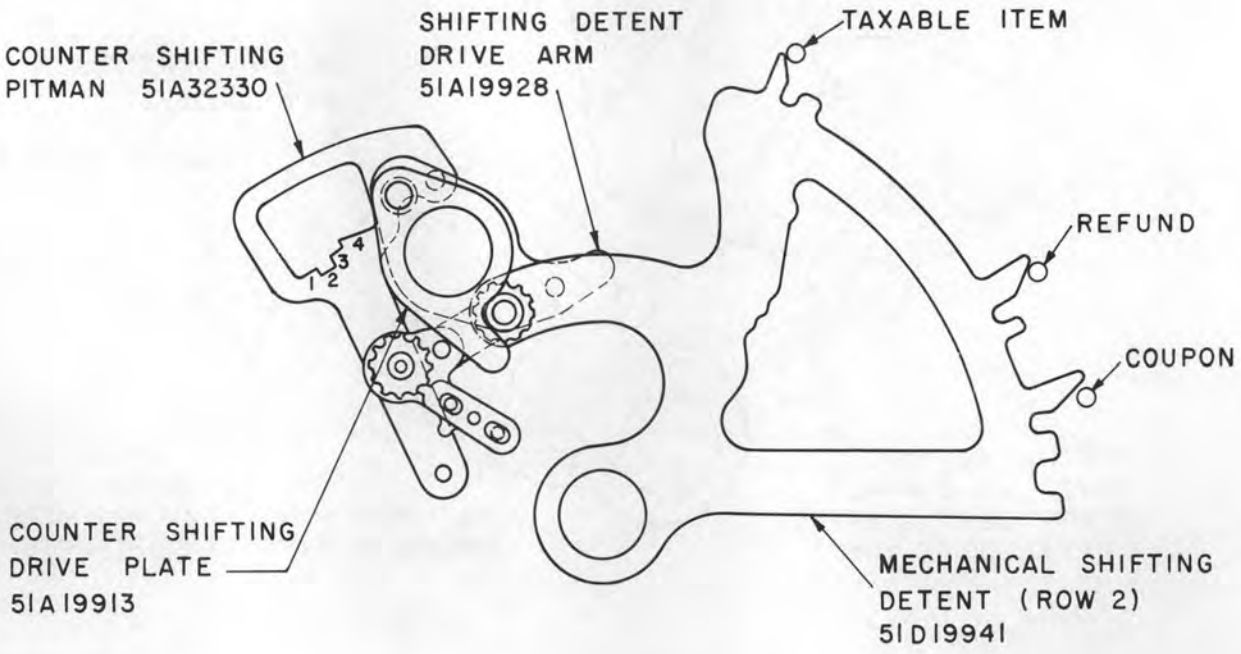
NOTE:

The reason for holding the clearance between the Shifting Cam Arm Stud and 4th step of the Shifting Pitman to a minimum, is to prevent an overthrow to the Counter at 1/2 T. O. H. on an Amount Tendered, Refund, or Coupon operation.

On these operations, the Shifting Pitman is moved back away from the high part of the Counter Shifting Pitman Stop.

At 1/2 T. O. H., as the Counter Shifting Pitman is carried down, it will contact the bevel surface of the Pitman Stop and be carried top to the back until the corner of the 4th step contacts the Stud in the Counter Shifting Cam Arm. This stops the Shifting Pitman, preventing an overthrow to the Counter.

(c) With the Zero Stop Control Detent up the bank, press the Total key and make the same test as Item 1. If the Counter Shifting Cam Arm Stud "Nips" on 4th step of Shifting Pitman, move the Counter Shifting Link Eccentric one position to overcome this condition.



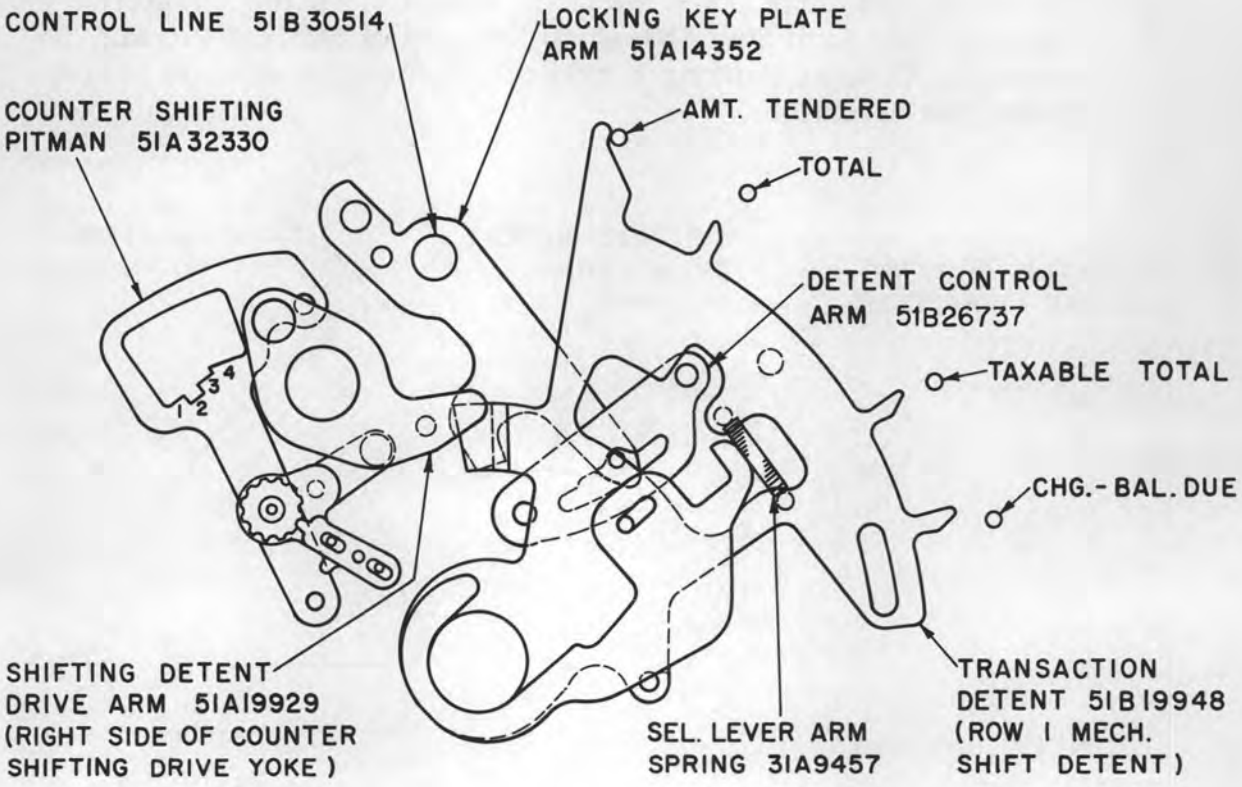
(d) Using first the Refund key, then the Coupon key, trip the machine and hold play out of the Counter Shifting Segment up. Push Counter Shifting Cam Arm down in front and Stud should contact 3rd step of Counter Shifting Pitman without "Nipping" 4th step.

Adjust for this condition, using eccentric at back of Row 2 mechanical Shift Detent.

(e) Trip machine using Taxable Item key and Meat key. The low step should be positioned under the Stud in the Counter Shifting Cam Arm. Make this test holding play out of Shifting Pitman in both directions.

If there is "Nip" on either step 1 or 3, move the eccentric for Row 2 Mechanical Shift Detent, one position in direction necessary to overcome this condition.

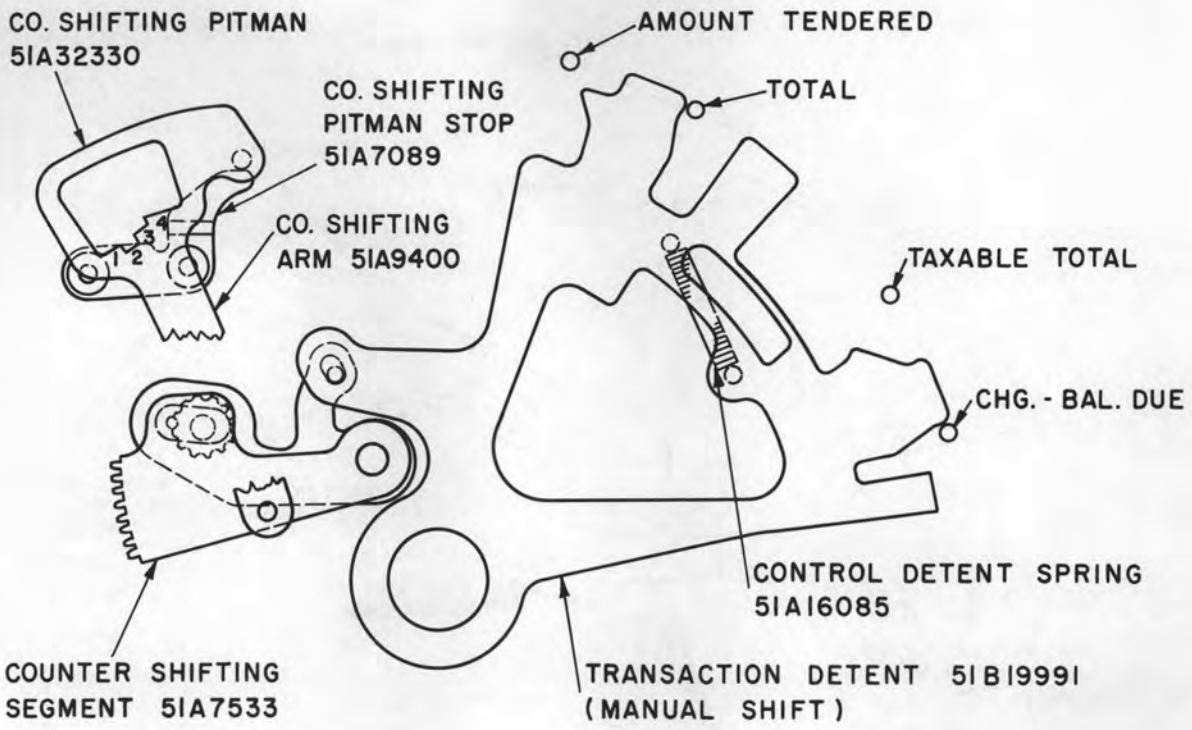
(f) With the Zero Stop Control Detent down the bank, trip the machine using the Taxable Total key. As this key is pressed, no movement should be given the Counter Shifting Drive Yoke.


CONTROL LINE 51B30514
LOCKING KEY PLATE ARM 51A14352
COUNTER SHIFTING PITMAN 51A32330
AMT. TENDERED
TOTAL
DETENT CONTROL ARM 51B26737
TAXABLE TOTAL
CHG.-BAL. DUE
1 2 3 4
SHIFTING DETENT DRIVE ARM 51A19929 (RIGHT SIDE OF COUNTER SHIFTING DRIVE YOKE)
SEL. LEVER ARM SPRING 31A9457
TRANSACTION DETENT 51B19948 (ROW 1 MECH. SHIFT DETENT)

If there is movement to the shifting Drive Yoke, the Row 2 Mechanical Shift Detent Eccentric will again have to be changed. However, if the first adjustments are properly made, it is very unlikely that an adjustment will have to be made at this point.

(g) Trip the machine using the Meat Key and push the Counter Shifting Cam Arm down in front. The Stud should have a safe hold on the 1st. step of the Shifting Pitman. If not, the new Counter Shifting Pitman 51A32330 should be installed. This Pitman has a larger surface for the 1st. step which will make adjusting the Shifting Pitman easier.

2. With the Zero Stop Control Detent down the bank, trip the machine using the Total key.



(a) The Shifting Pitman Stud should be carried down snug, but free, against the Counter Shifting Pitman Stop.

(b) The Shifting Segment Eccentric is used for making this adjustment.

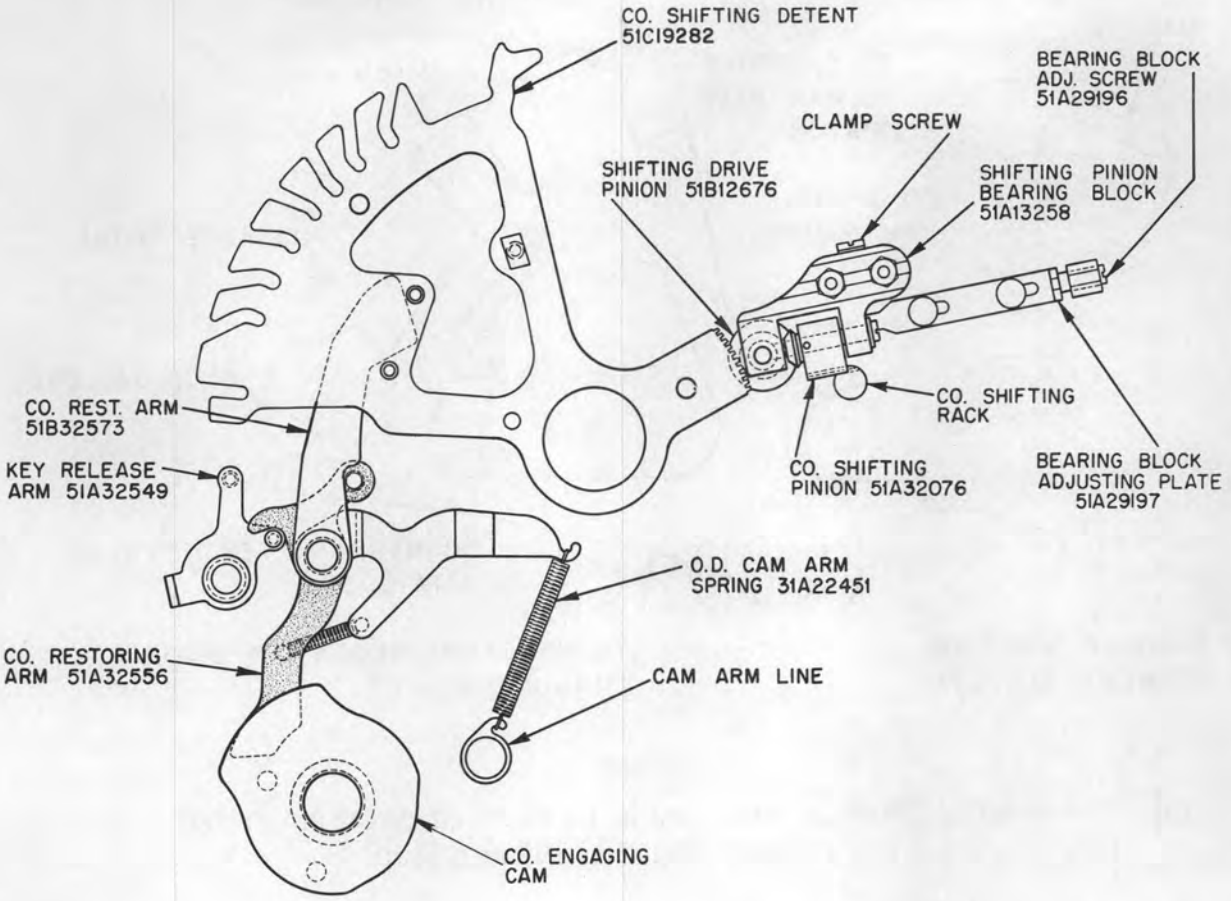
(c) If the proper adjustment cannot be obtained through the use of this eccentric, it will be necessary to replace the Counter Shifting Pitman Stop with one listed below.

51A10328	Counter Shifting Pitman Stop	Number 1	.707
51A10329	Counter Shifting Pitman Stop	Number 2	.717
51A10330	Shifting Pitman Stop	Number 3	.727
51A11060	Shifting Pitman Stop	Number 4	.697
51X34159	Shifting Pitman Stop	Number 5	.687
51X34160	Counter Shifting Pitman Stop	Number 6	.677

To replace stop, set eccentric in neutral position and with the key depressed, select a stop which will require the samllest amount of adjustment to the eccentric.

NOTE:

The Pitman Stop cannot be removed without first removing the Transmission Assembly.



Step 4

Removing Upper Counter Pinion Line

1. Remove the Lower Counter Shifting Cam and Shifting Arm.

2. Remove the Shifting Pinion Bearing Block.

3. Remove the Guide Plate.

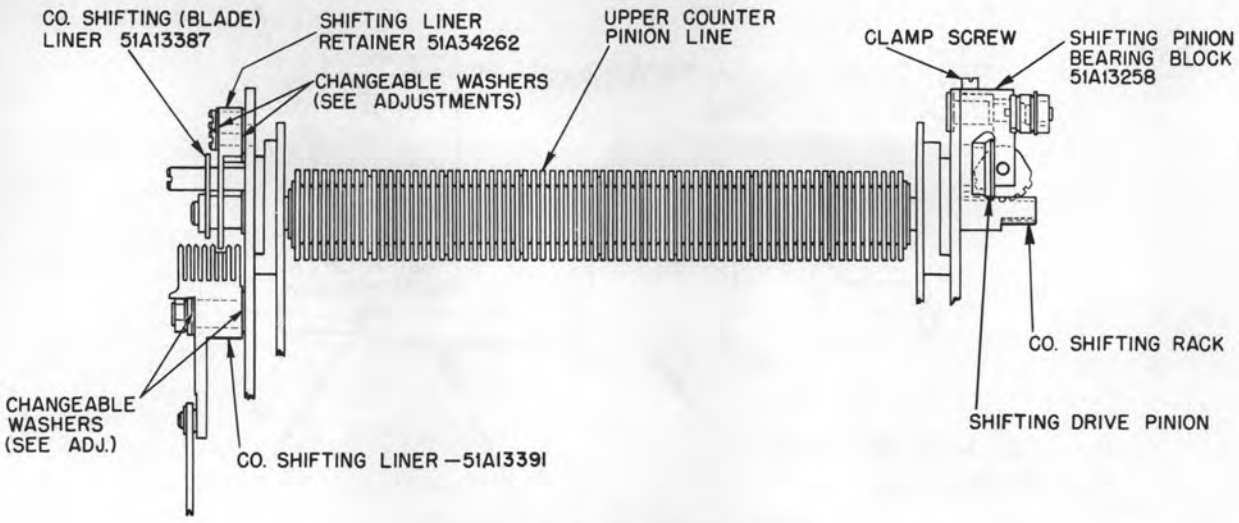
4. Remove nut on left end of the Counter Shaft and take Liner Blade off.

5. Turn the Pinion Tube Shaft until the Counter Shifting Rack can be removed from the right side.

6. Restore all transfers and lift the Pinion Line up on the right side

If any group of Pinions has excessive end play, .009 or less, install oversize Pinions to reduce the play.

UPPER COUNTER
(C-52)



To check for excessive play, use a .015 washer and see if it can be inserted down to the Pinion Tube (without pressure) in any group. If so, the group has too much play.

The Pinions listed below can be used to correct this condition:

41A5903	Counter Pinion	.084 (STD.)
19A2866	Counter Pinion	.082
51A11674	Counter Pinion	.087

Replacing Upper Pinion Line

1. Restore all transfers.

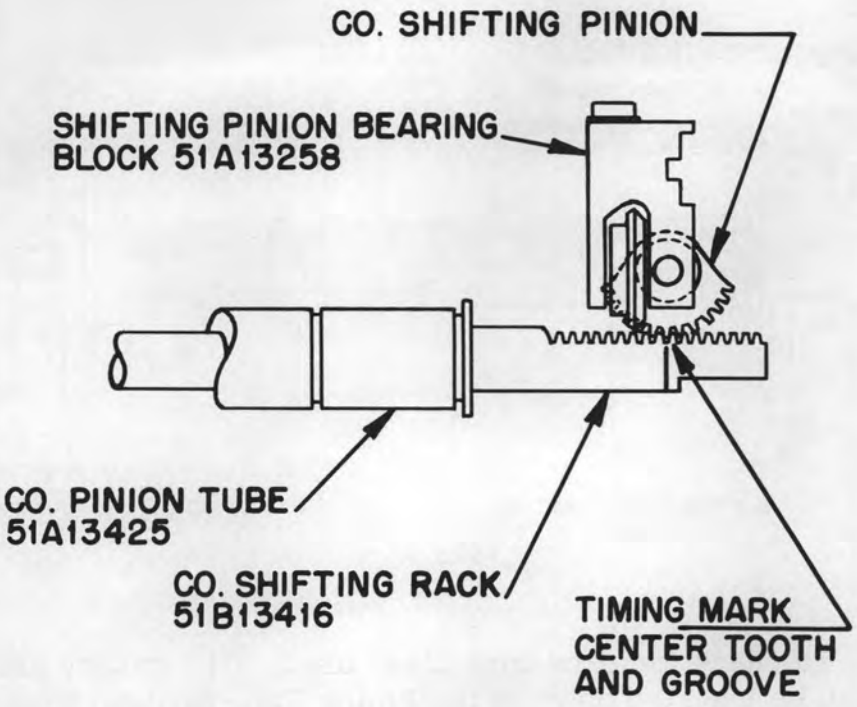
2. Line-up the long teeth and replace the Pinion Tube with the long teeth up.

3. Start from the left and rotate the Pinions until they line up with the stationery liner.

4. Install the Counter Shifting Rack and turn the Pinion Tube Shaft until the rack is all the way in.

5. Replace the Liner Blade, Rack Guide Plate, and Liner Blade Guide Screw and check for freedom.

6. Install Lower Counter Shifting Cam and Shifting Arm.


CO. SHIFTING PINION
SHIFTING PINION BEARING BLOCK 51A13258
CO. PINION TUBE 51A13425
CO. SHIFTING RACK 51B13416
TIMING MARK CENTER TOOTH AND GROOVE

Upper Counter Adjustments

1. With the Shifting Pinion Bearing Block off, the Counter must shift free.

2. Check the Counter Shifting Pinion for end-play on the Shifting Pinion Shaft.

   End play must not exceed .005 .

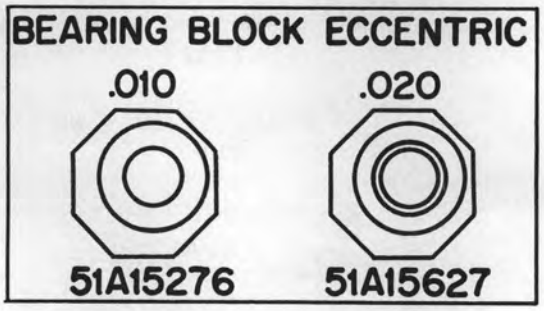
   (a) To adjust, use one of the washers listed below.

900A38171	Consecutive Number Carrying Pawl Washer	.005
51A37413	Bearing Block Washer	.003

   If there is wear on the Pinions in the Bearing Block, replace the Pinions.

3. Replace the Shifting Pinion Bearing Block and time the Counter Shifting Pinion with the Counter Shifting Rack. Groove on Counter Shifting Rack in line with center tooth of the Counter Shifting Pinion.

4. Install eccentrics on the Studs with the high sides up.



(a) Adjust the eccentrics by turning them the same number of positions in the same direction. Turn the eccentrics until the Counter Shifting Pinion meshes with the Shifting Rack, as deep as possible with no binds.

(b) The eccentrics come in sixes .010 and .020. Always use them in pairs of the same size.

(c) Check for binds, counter in and out of mesh.

5. Back off the adjusting screw for the Bearing Block Adjusting Plate and move the Shifting Pinion Bearing Block all the way to the back.

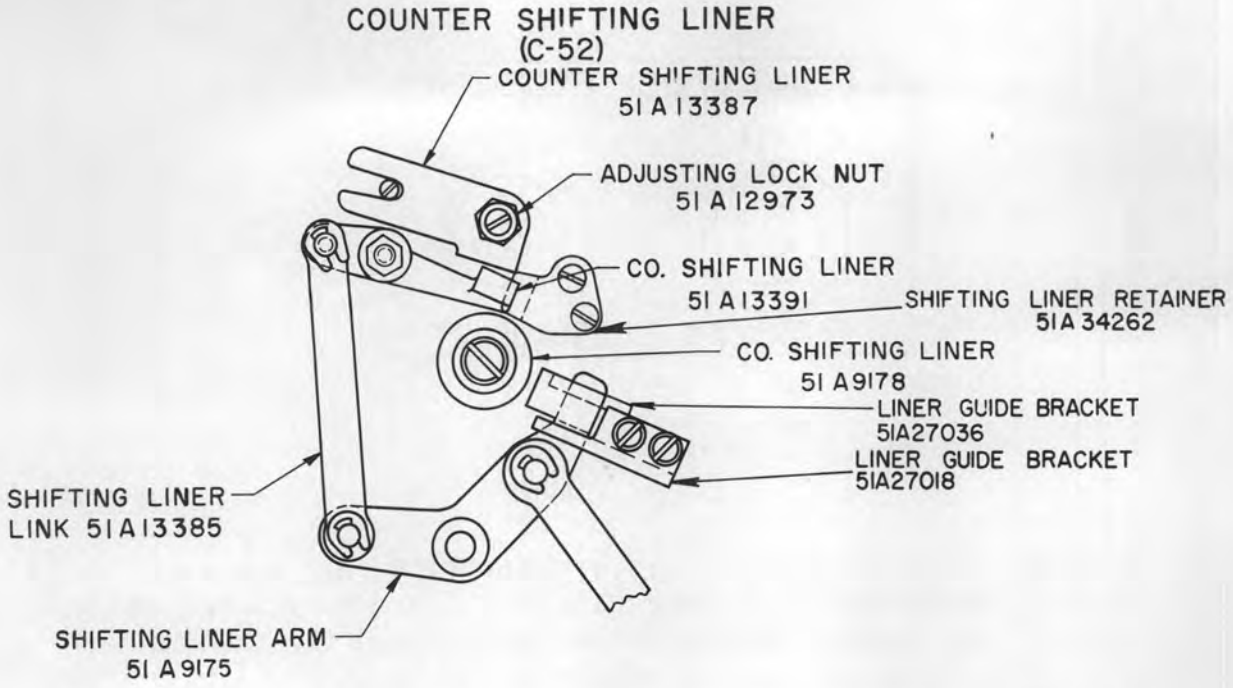
(a) Tighten the clamp screw just tight enough to take the play out of the Bearing Block.

(b) Replace the Lock Washers and Nuts on the two studs and tighten finger tight.

6. Shift the Pinion Tube all the way to the right. The last Pinion in each group should be aligned with the Transfer Pawl Slot.

(a) To adjust, use one of the washers listed below on the hub of Shifting Blade Liner.

51A14289	Counter Pinion Liner Washer	.005
51A14290	Counter Pinion Liner Washer	.010



7. With the Pinion Tube shifted to the right, engage the Shifting Liner and the Counter should be held snug.

   (a) To adjust, washer the Counter Shifting Liner 51A13391 to the right or left with one of the washers listed below.

800A255	Counter Spacing Washer	.005
2000A25209	Slip Feed Stud Washer	.010
2000A44759	Elimination Pawl Control Stud Washer	.020

8. If the adjustmen t of the Counter Shifting Liner is changed, the Shifting Liner Retainer will have to be adjusted also.

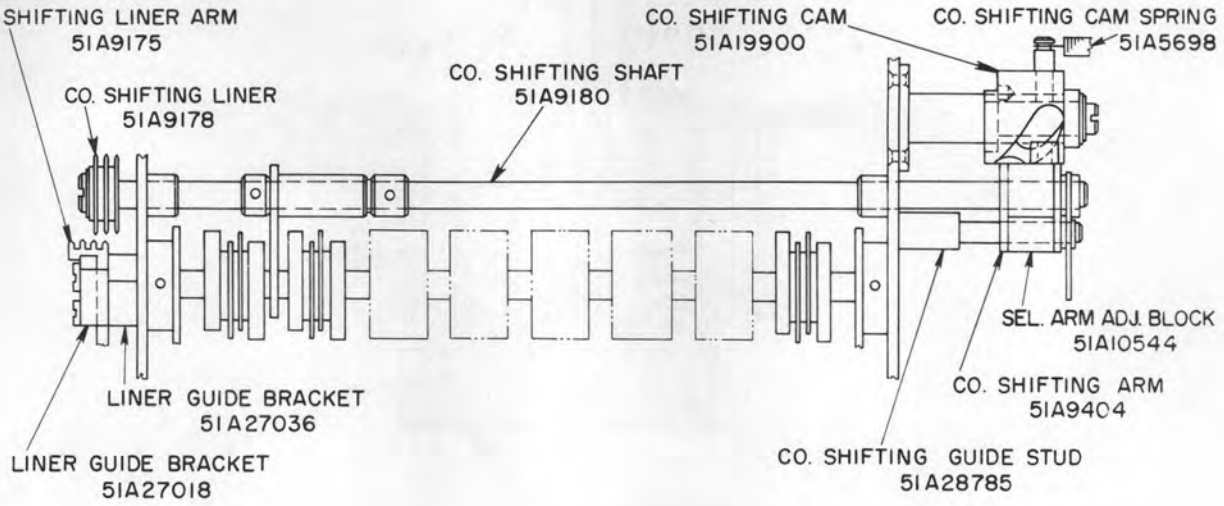
   (a) Use washers listed below to move the Retainer to the right or left.

1200A30300	Special Counter Retaining Pawl Washer No. 3	.010
2000A31500	Indicator Control Liner Stud Washer	.030
3000A125019	OD Key Stud Washer	.020
700A60467	Tape Printer Lining Pawl Washer	.005

9. With the Counter Shifting Blade Liner in the fifth slot from the left, of the Counter Shifting Liner 51A13391, turn the Tube Shaft until the center tooth of the Counter Shifting Pinion and groove on the Shifting Rack are in alignment.

10. Counter is ready to be installed.

LOWER COUNTER SHIFTING
(C-52)



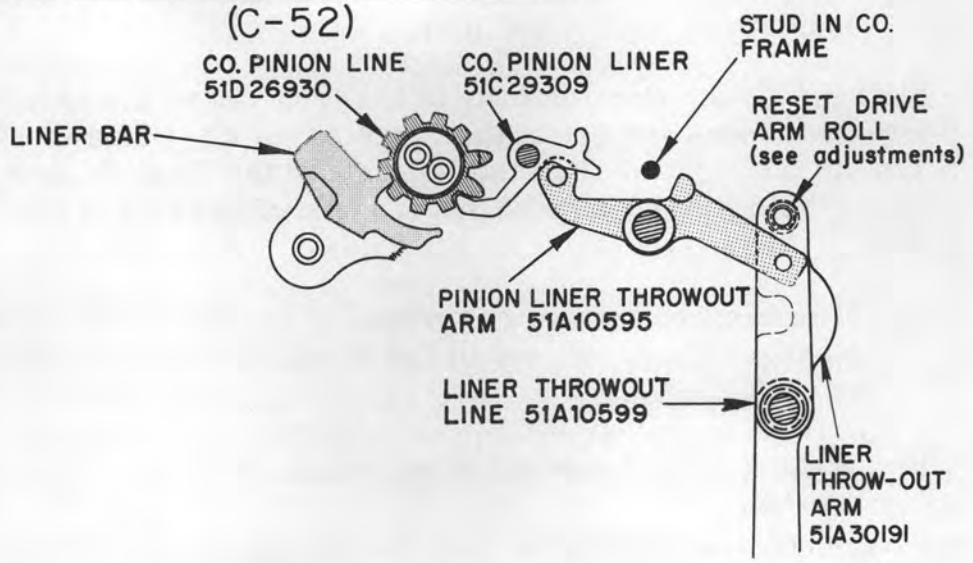
Step 5

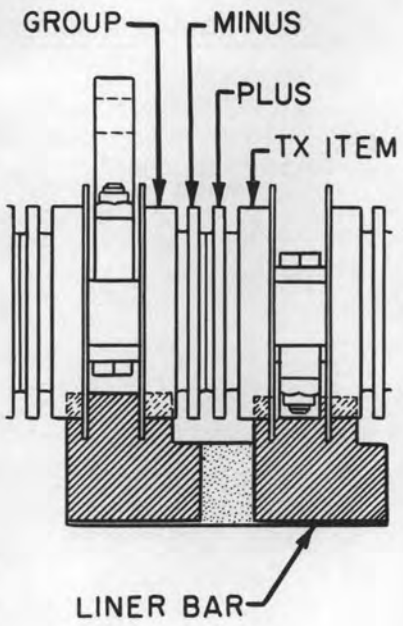
Lower Counter Adjustments

The following tests should be made to determine if it is necessary to disassemble the Counter Unit.

1. Shift the Lower Counter to the Plus Pinions and move the Shifting Liner Arms into the Shifting Liners. Be sure that all transfers are restored. Hold all Pinion Liners out of the Pinions. (Use Pinion throw out liner to hold liners out)

PINION LINER THROW-OUT
(C-52)





(a) Turn both plus and minus pinions to the front and the back. They must turn freely without binds or boney action. As the Pinions are turned, the long teeth will "Nip" on both the Transfer Pawl and Transfer Trip Pawl. This should not be interpreted as a hard action to the Pinion.

2. Check Plus and Minus Pinions for excessive end play.

(a) Insert a .015 washer between the Plus and Minus pinions. Use CAUTION when inserting washers to prevent damage to the bearing surfaces between the Plus and Minus Pinions.

(b) If the washer moves freely between the Pinions, this will indicate excessive end play.

3. Shift the Lower Counter fully to the left. Move the Liner Arms into the Liners and see if the Liner Arms must cam the Pinion Line to the right to align the left side of the Taxable Itemizer Pinion with the left side of the Transfer Pawl Slot in the Liner Bar.

(a) If excessive camming is noted, it will be necessary to add washers to the left end of the Pinion Line to prevent this overshifting.

(b) Make a note of approximately what size washers will be needed.

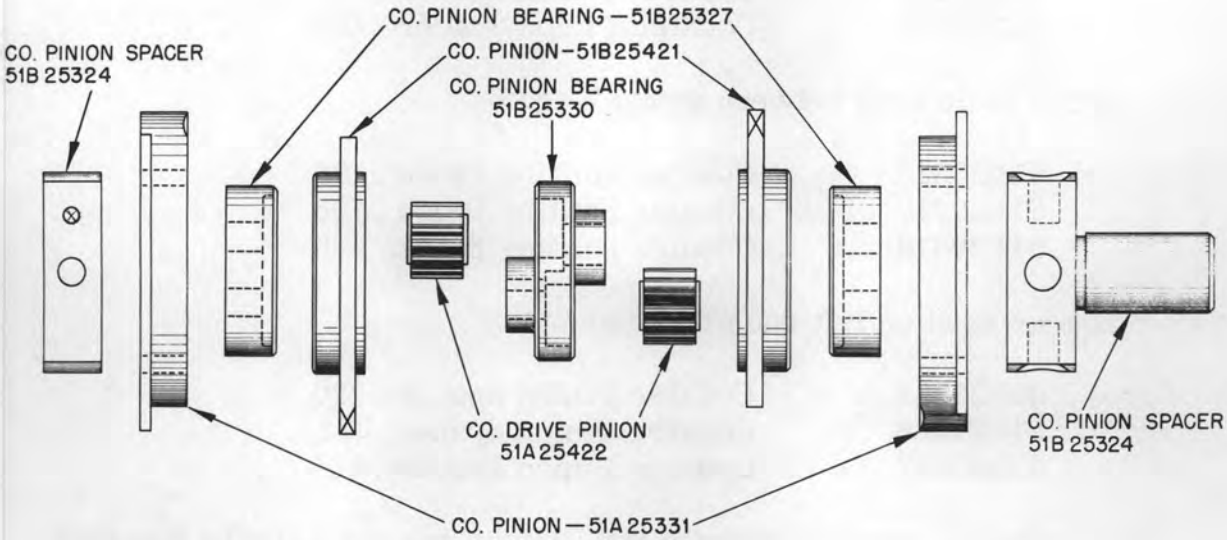
NOTE:

If the Liner was loose on the Shifting Shaft or if the Pinions do not line up properly when the Liners are in, it will be necessary to estimate how far the Pinion Line is overshifting.

4. To correct excessive end play in the Lower Counter, it will have to be disassembled. The Pinion Line can be disassembled from either end. Never remove more than four groups of Pinions at one time.

Make a note of the position of the drill marks on the Pinion spacers before the Pinion Line is torn down.

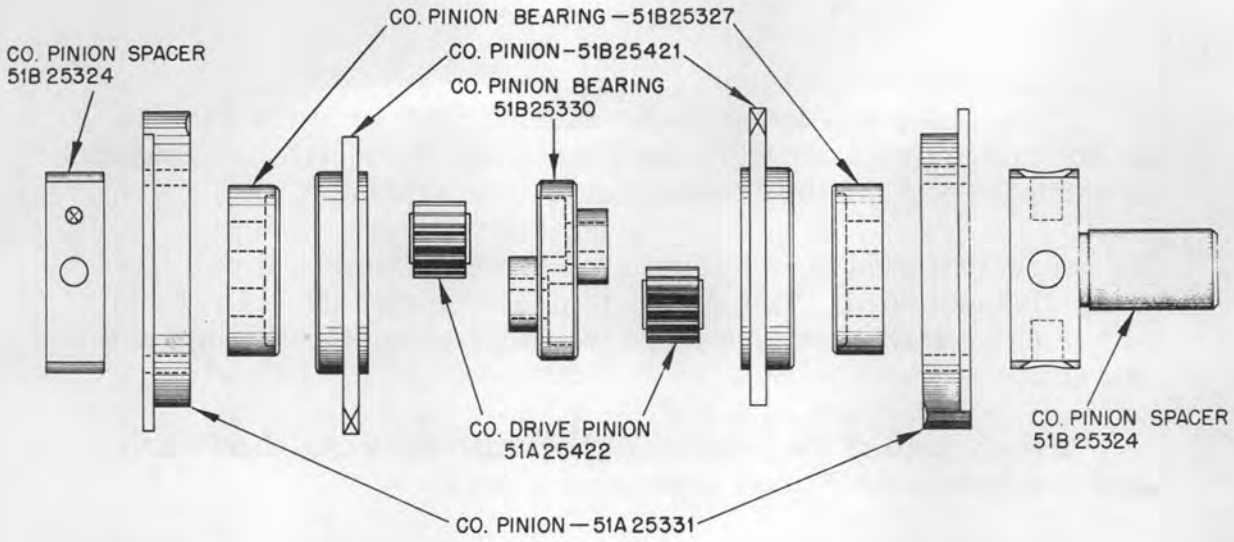
All parts must be laid out carefully and replaced in the same location and position from which they were moved.



5. The following parts should be used to obtain the proper spacing of the Pinion Groups. (.005 to .007)

Pinions used in the Group and Taxable Itemizer Position:

51A25331	Counter Pinion	.102
51A27402	Counter Pinion	.100
51A27403	Counter Pinion	.104



Spacers to be used between all groups, except 7 and 8.

51B25362	Counter Pinion Spacer . 196
51B29320	Counter Pinion Spacer . 198
51B29319	Counter Pinion Spacer . 200

Block to be used between group 7 and 8.

51B25325	Counter Shifting Block . 196
51B29317	Counter Shifting Block . 198
51B29318	Counter Shifting Block . 200

Spacer used on left end of Pinion Line.

51B25324	Counter Pinion Spacer . 220
51B29356	Counter Pinion Spacer . 222
51B29357	Counter Pinion Spacer . 224

Proper spacing between the Pinions can normally be obtained by using one of the three Pinions in the Group and Taxable Item position. If not, it will be necessary to replace the spacers and bearings.

With the Pinion Line assembled, there should be no end play between the Counter Pinion and Bearings in each group.

With no play between the bearings, replacing the group Pinion will give correct spacing between this Pinion and the Minus Pinion.

Replacing the Taxable Itemizer Pinion will correct the spacing between the Taxable Itemizer Pinion and Plus Pinion.

If a smaller size bearing is used, also use the next larger size Pinion Spacer to the left of the Group. Use larger shifting block for Group 7.

The available bearings are listed below.

51B25328	Counter Pinion Bearing . 115
51B25327	Counter Pinion Bearing . 117

One of the three spacers can be used on the left end of the Pinion Line but use only Counter Pinion Spacer 51B25324 on the right end.

6. To reassemble the Pinion Line, place timing rod in the holes which are provided.

   (a) Place the long tooth of the minus pinions against, and to the back of, the Timing Rod. (This is the tooth with the drill mark). The long tooth of the plus pinion will go one position further to the back.

NOTE:

All parts must be cleaned and lubricated with NCR lubricant NO. 553.

7. After each group of Pinions has been assembled, check for proper timing. The Plus and Minus Pinions must have equal play.

   (a) If either or both pinions are tight, this indicates that the Pinion is out of time with the Counter Drive Pinion.

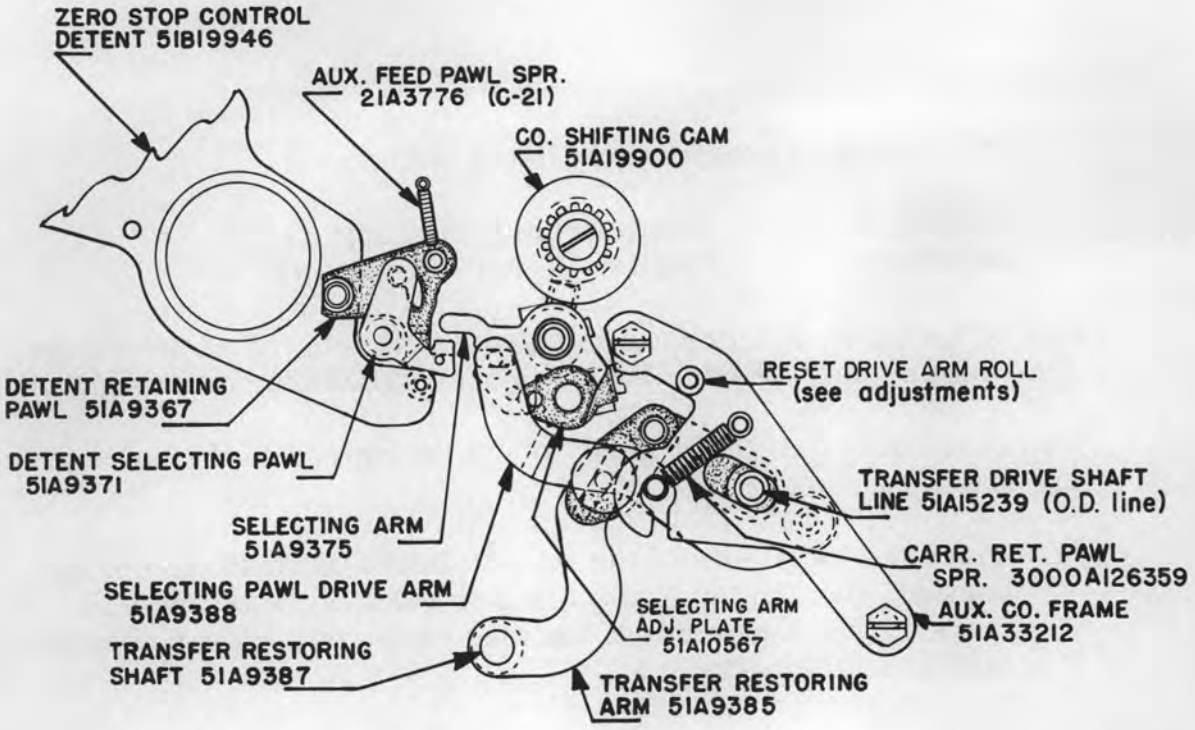
   (b) The Allen screws in the Counter Pinion Spacers must be tightened so that all screws will have even tension.

   (c) Care must be taken when tightening the nuts on the screws, between the Pinion groups, to prevent stripping the threads.

   (d) After Pinion Line is assembled, check all Pinions for being free. If washers are needed to prevent overshifting Counter in the home position, install washers at this time.

   Washers to correct overshift.

800A255	Counter Spacing Washer . 005
2000A5610	Selecting Link Washer . 015


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
RESET DRIVE ARM ROLL (see adjustments)
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
SELECTING ARM 51A9375
CARR. RET. PAWL SPR. 3000A126359
SELECTING PAWL DRIVE ARM 51A9388
SELECTING ARM ADJ. PLATE 51A10567
AUX. CO. FRAME 51A33212
TRANSFER RESTORING SHAFT 51A9387
TRANSFER RESTORING ARM 51A9385

Step 6

Overdraft Adjustments

1. Place Lower Counter Engaging Arm into position and insert short support shaft through Counter Engaging Arm and into Counter Unit.

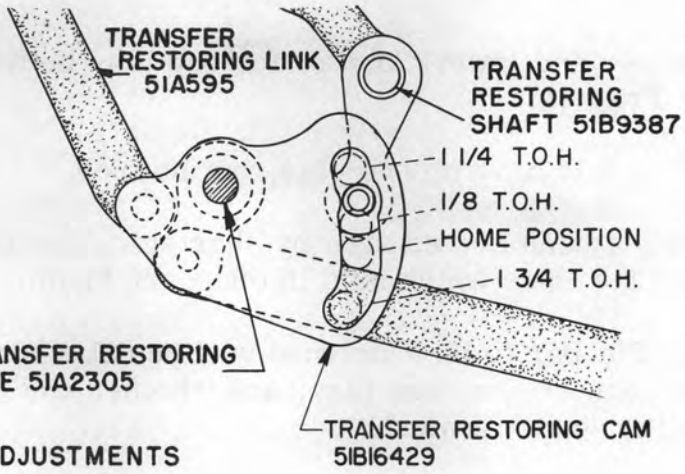
With the Lower Counter Transfer Restoring Cam in position for transfer trip, (shown in view), use the Counter Engaging Arm and move Counter into mesh.

Move the Selecting Link up slowly and check clearance between Selecting Link Stud and Pie-Shaped Stud.

2. Move Counter out of mesh with engaging Arm. With the Transfer Restoring Cam fully down in front, move the Selecting Link up and again check clearance between Selecting Link Stud and Pie-Shaped Stud.

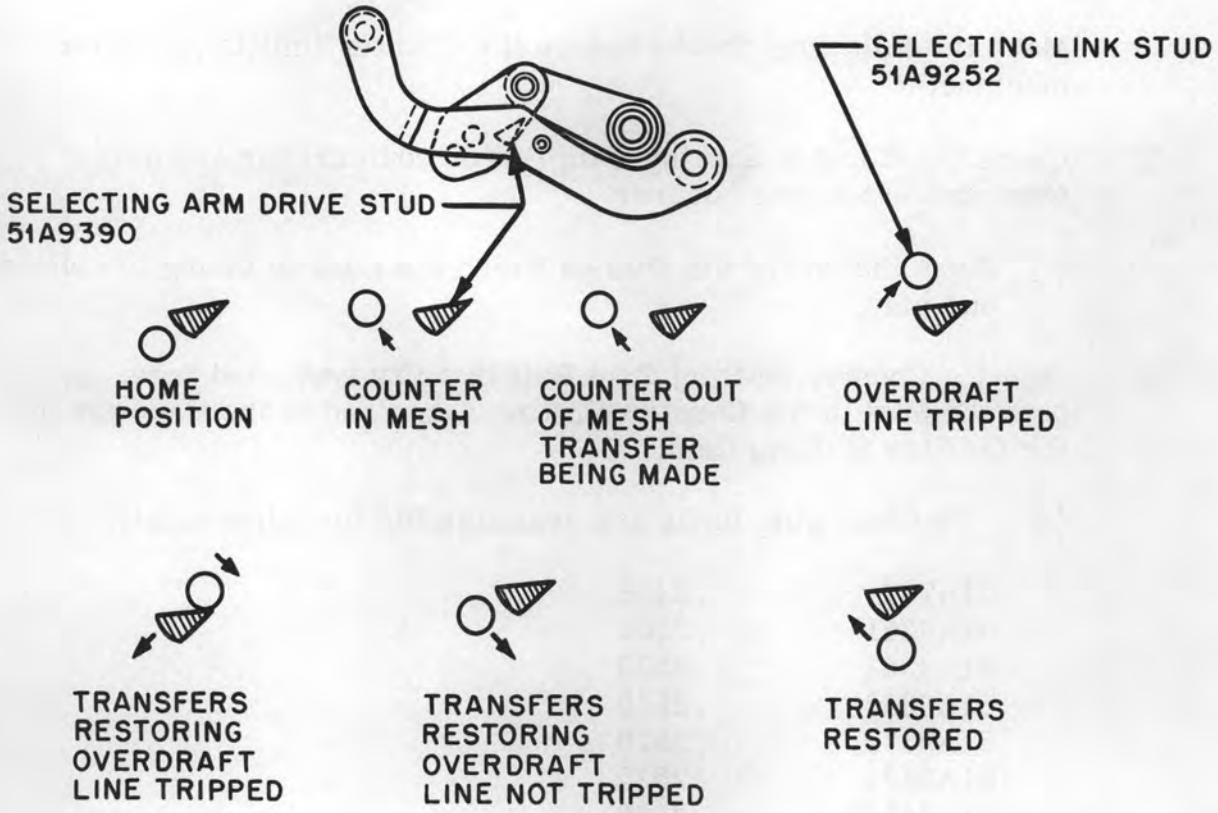
3. With the Transfer Restoring Cam fully down in front and the Counter out of mesh, trip the Overdraft Line. Move the Transfer Restoring Cam up in front and watch the Selecting Link Stud.

The Stud must pass over the top of the Pie-Shaped Stud.



With the Transfer Restoring Cam fully up in front, there must be clearance between the Selecting Link Stud to allow the Selecting Pawl Drive Arm to restore.

(a) To give more clearance either to the front or back of the Pie-Shaped Stud, broach the Transfer Restoring Arm on the Shaft.


SELECTING LINK STUD 51A9252
SELECTING ARM DRIVE STUD 51A9390
HOME POSITION
COUNTER IN MESH
COUNTER OUT OF MESH TRANSFER BEING MADE
OVERDRAFT LINE TRIPPED
TRANSFERS RESTORING OVERDRAFT LINE TRIPPED
TRANSFERS RESTORING OVERDRAFT LINE NOT TRIPPED
TRANSFERS RESTORED

Step 7

Check upper and lower Counter for end play between the Counter Support Frames.

1. Counter should have no end play, but be free.

   (a) End play can be removed by shortening one or more of the four Tie Bars which hold the Support Frames.

   (b) The Tie Bar to be shortened will be determined by which of the Counters has end play, and whether end play is greater "in" or "out" of mesh.

2. Check the following:

   (a) Over draft Line must be free.

   (b) Transfer Pawl Control Yoke for freedom, Counter Shifting Shafts for upper and lower Counters, for being free in the Counter Support Frames.

   (c) Counter must move freely in and out of mesh.

Step 8

Make the following checks before the Counter Unit is put in the machine.

1. Check the Counter Shifting Cam (lower counter) for end play. Cam should be snug but free.

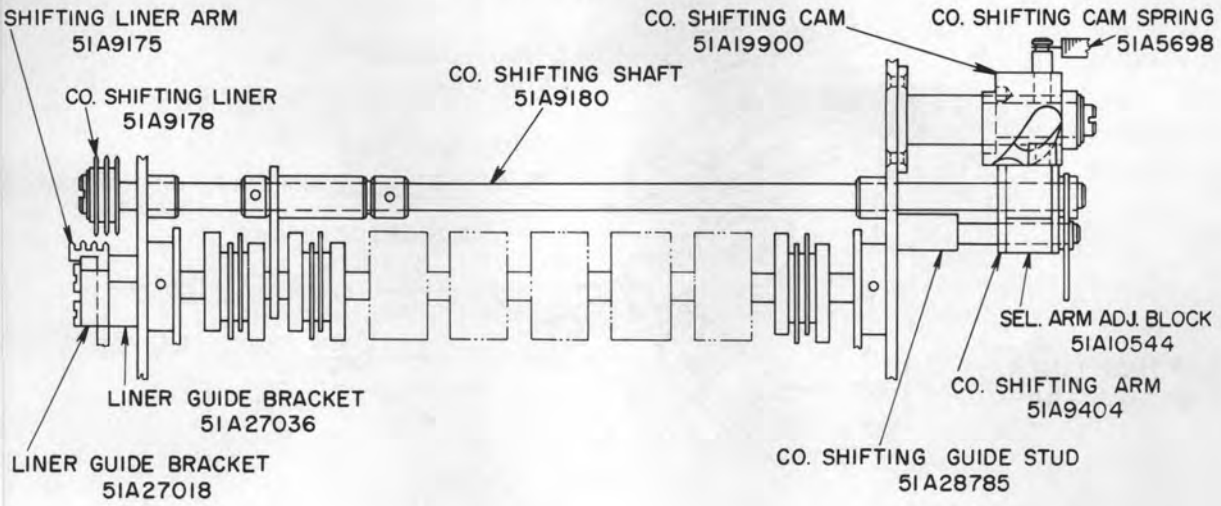
   (a) Stone the end of the Stud on which the Cam is swung to remove end play.

2. Select a Counter Shifting Cam Roll that fits snug, but free, on both the Stud in the Counter Shifting Arms and in the Raceway of the Counter Shifting Cam.

   (a) The following Rolls are available for the adjustment.

51A794	.2498
51A9341	.2505
51A9342	.2510
51A9343	.2515
51A9579	.2520
51A9581	.2525
51A34213	.2530
51A34214	.2535

LOWER COUNTER SHIFTING
(C-52)



3. The Counter Shifting Arm should ride snug, but free, on the Shifting Shaft Guide Stud.

   (a) To remove play, peen the thin extensions of the Arms with a ball peen hammer.

   (b) Be sure that arms are free on guide studs in all positions.

   (c) The Selecting Arm Adjusting Block must have a minimum of play between the extensions of the Counter Shifting Arm for the lower counter. To reduce play, form the Counter Shifting Arms toward the Adjusting Plate.

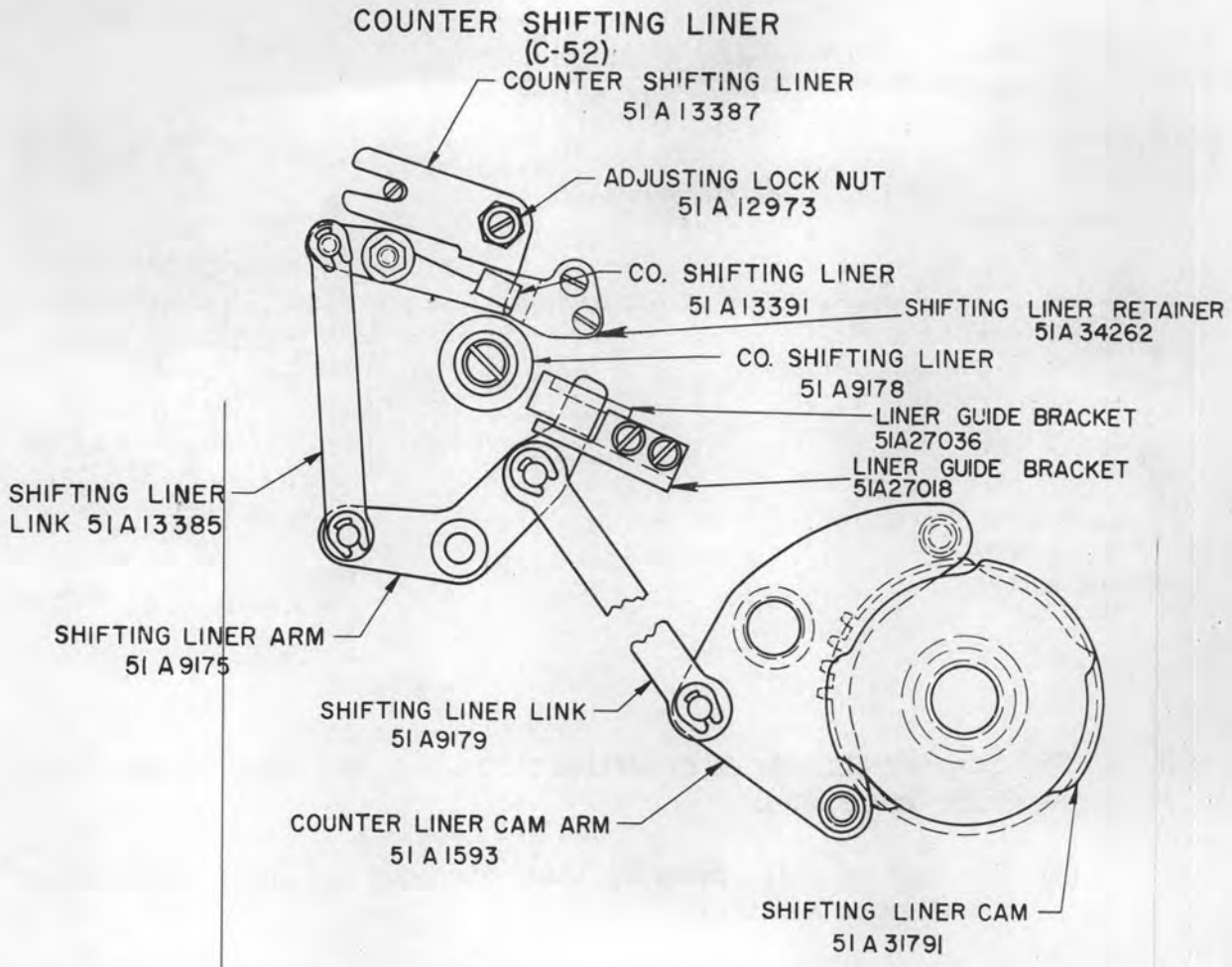
4. Check the Shifting Liner Arm (lower counter) for Side play. There should be no play in the Liner Guide Bracket, snug but free.

   (a) The Guide Bracket can be "stoned" where it fits together to take out side play.

Step 9

Shifting Liner Adjustment (Lower Counter)

1. Move the Shifting Liner Arm into the Counter Shifting Liner, so one tooth of the Liner Arm is to the left and outside of the Counter Shifting Liner.



2. Turn the Counter Shifting Liner, on the Counter Shifting Shaft, until the Plus Pinions line up with the Transfer Pawl slots in the Stationary Liner.

   (a) With Plus Pinions in alignment and Shifting Liner Arms in Liner, hold play out of the Pinion Line to the left. There must be .010 clearance between the Minus Pinion and the Stationary Liner.

   (b) With the Minus Pinions in alignment and the Liner Arms in the Liner, hold play out of the Pinion Line to the right and check clearance between the Plus Pinion and Stationary Liner. There must be .010 clearance.

   (c) Correct adjustment to the Counter Shifting Liner and Shifting Shaft to satisfy this condition.

3. Use screwdriver and adjusting tool to tighten the screw that locks the Counter Shifting Liner in position.

   (a) Again check alignment of Plus pinions to see that adjustment is not disturbed.

4. Move Liners out and shift Counter fully to the left.

   (a) The Liner Arms should move into the Liners with no draw or a slight draw to the right. There should be no draw to the left.

   (b) If there is draw to the left, it will be necessary to remove washers between the Pinion Line and Left Counter Frame.

5. Counter Shifting Arm Adjustment.

   (a) Loosen Allen Screw in the Shifting Liner Arm and turn the Counter Shifting Shaft into the Counter Shifting Arm until it bottoms the Arm.

   (b) Back up the Shaft 5/8 turn and leave the Allen Screw loose. (See Step 13)

Step 10

Installing Counter Unit

1. With Zero Stop Control Detent down the bank, trip the machine, Using the Total Key, and operate to 1/16 T. O. H.

2. Shift the Pinion Lines to the right and remove the Counter Shifting "Blade" Liner Guide Screw (Upper Counter).

3. Start the Counter into the machine by placing the screw on the Lower Counter Shifting Cam into the middle shaft hole of the right side frame and swing the left end of the Counter into the machine. The Counter can then be moved into position.

NOTE:

Be sure when installing Counter that the Shifting Liner Link is above the formed part of the Drawer Control Link.

4. Replace Upper Counter Support Shaft (without clips).

5. Replace Lower Counter Engaging Arm and short Support Shaft.

6. Replace Large Support Shaft and remove Upper Support Shaft.

7. Replace Lower Counter Shifting Link. Eccentric should be installed with high side up.

8. Rock the Counter top to the back and shift the Upper Counter to the center position. Five teeth of the Liner Arm outside of Blade Liner.

Shift the Lower Counter to the Plus Position and move the Liner Arms into the Liners.

9. Rock Counter top to the front and install Upper Support Shaft (without clips).

10. Loosen Clamp Screw and lock nuts, on the shifting Pinion Bearing Block, and using finger push the Bearing Block to the front to mesh with the Shifting Segment. Turn the adjusting screw until the Bearing Block adjusting plate just touches the Bearing Block.

Tighten Clamp Screw just tight enough for lock washer to prevent screw backing out.

Tighten lock nuts that hold the Shifting Pinion Bearing Block in place.

11. Move Liner Arms out of Liners and check Lower Counter for proper timing.

(a) Should see four teeth of Shifting Segment above top of Counter Shifting Cam.

12. Reverse removal procedure and complete installation of Counter with one exception. Do not hook up Shifting Liner Link.

13. Operate machine home and there should be five teeth of the Counter Shifting Segment above the Counter Shifting Cam.

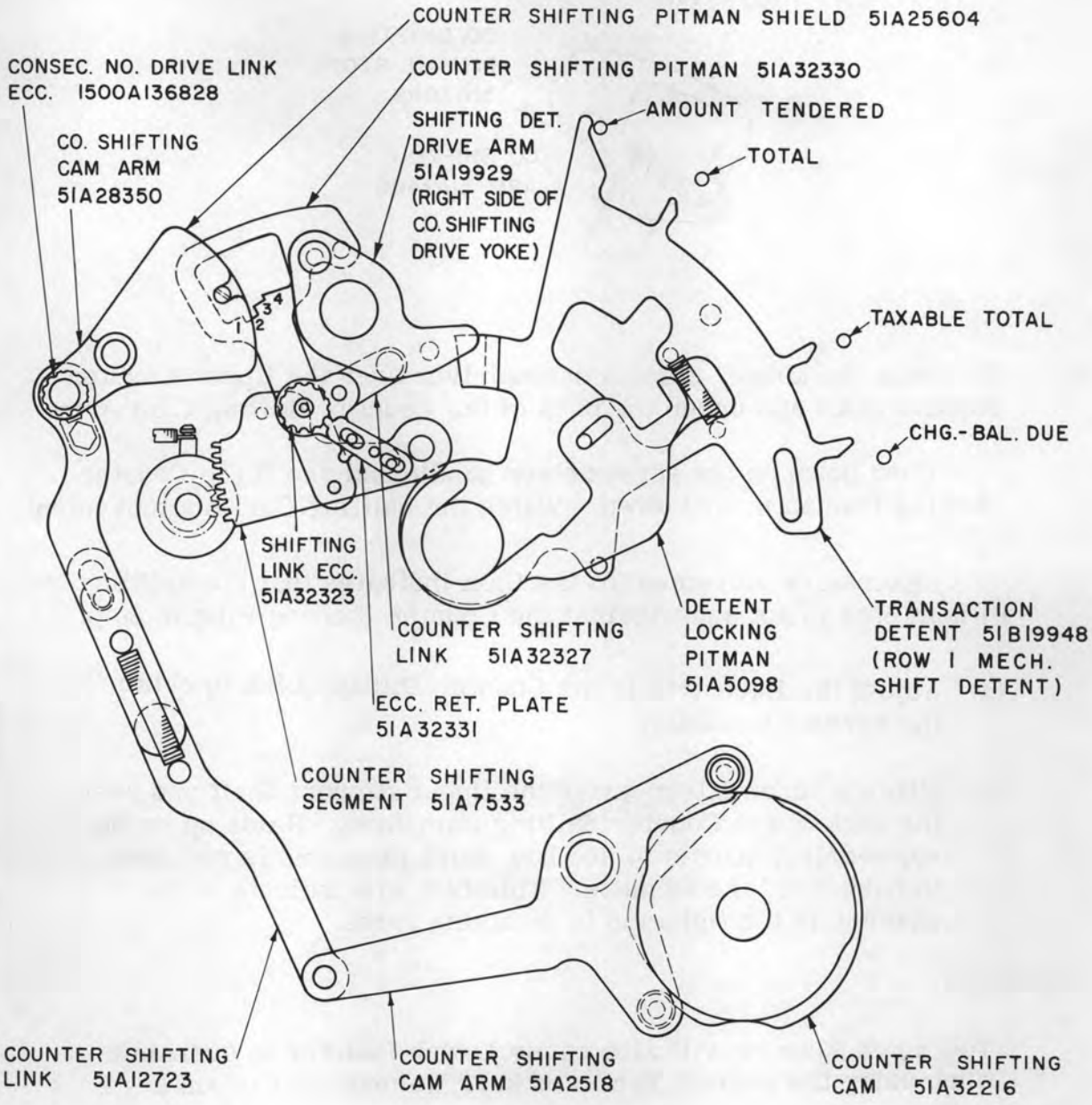
14. Move Liner Arms in and out of Engagement with the Liners. There should be no draw.

(a) To adjust draw (lower Counter) turn Counter Shifting Shaft until there is no draw when liners are engaged and tighten Allen Screw in Counter Shifting Arm.

(b) To adjust draw for upper counter, loosen lock nut on Shifting (Blade) Liner and Turn Pinion Tube Shaft until there is no draw when Liner's engage.

15. Install Shifting Liner Link and replace clip.

(c) Remove Upper Support Shaft and shield from the Counter Shifting Pitman. Repeat test on Step 3 to insure that the Shifting Pitman is adjusted properly.

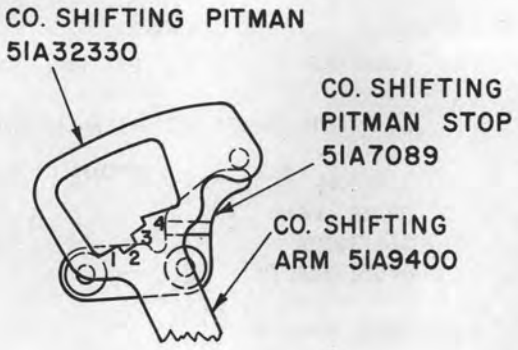

COUNTER SHIFTING PITMAN SHIELD 51A25604
CONSEC. NO. DRIVE LINK ECC. 1500A136828
COUNTER SHIFTING PITMAN 51A32330
AMOUNT TENDERED
SHIFTING DET. DRIVE ARM 51A19929 (RIGHT SIDE OF CO. SHIFTING DRIVE YOKE)
CO. SHIFTING CAM ARM 51A28350
TOTAL
TAXABLE TOTAL
CHG.-BAL. DUE
SHIFTING LINK ECC. 51A32323
COUNTER SHIFTING LINK 51A32327
DETENT LOCKING PITMAN 51A5098
TRANSACTION DETENT 51B19948 (ROW I MECH. SHIFT DETENT)
ECC. RET. PLATE 51A32331
COUNTER SHIFTING SEGMENT 51A7533
COUNTER SHIFTING LINK 51A12723
COUNTER SHIFTING CAM ARM 51A2518
COUNTER SHIFTING CAM 51A32216

Step 11

Counter Shifting Pitman Squeeze Adjustment

1. Depress an item key that gives a one position shift at 5/8 T. O. H. and operate until the Counter Shifting Cam Arm has received its full movement down in front. Stop operation before Liner Arms engage Liners.

   (a) The Counter Shifting Pitman should be carried down until the Stud is snug against the Pitman Stop.



2. To check the above, place a screwdriver over the Upper Counter Support Shaft and under the back of the Counter Shifting Cam Arm.

Push down on the screwdriver handle and see if the Counter Shifting Pitman moves down. Watch the Shifting Cam for movement.

Excessive movement to the Cam indicates that the Shifting Pitman Stud is not snug against the Counter Shifting Pitman Stop.

(a) Adjust the Eccentric in the Counter Shifting Link to obtain the correct condition.

(b) Place a screwdriver under the Upper Support Shaft and over the back of the Counter Shifting Cam Arm. Raise up on the screwdriver handle to see how much pressure is required to back "off" the squeeze. This test will indicate if the squeeze is too tight and is straining parts.

CAUTION:

Too much squeeze will also cause Lower Counter to overshift when using the amount Tendered key, Refund and Coupon keys.

Step 12

Lateral Location of Counter Unit

1. With Amount key banks out, operate with the Grocery Motor Bar and add 9's to the Plus side of the Crossfooter.

2. Use Total key and operate until Segments are almost fully up the bank.

(a) Move the Differential Segments up and down and sight down the left side of the segments. The Counter Pinions should be flush with the Segments.

(b) Also, the segments should be free and line-up with the slots in the stationary liner.

3. Move the Unit Lock Lever to the Read Row 2 position and depress the Grocery Motor Bar. Operate until the Segments are almost fully up to bank.

(a) Move the Differential Segments up and down. Check the line-up of the Upper Counter Pinions. They should be flush with the left side of the Segments.

(b) Segments should also be free and line up with the slots in the Stationary Liner.

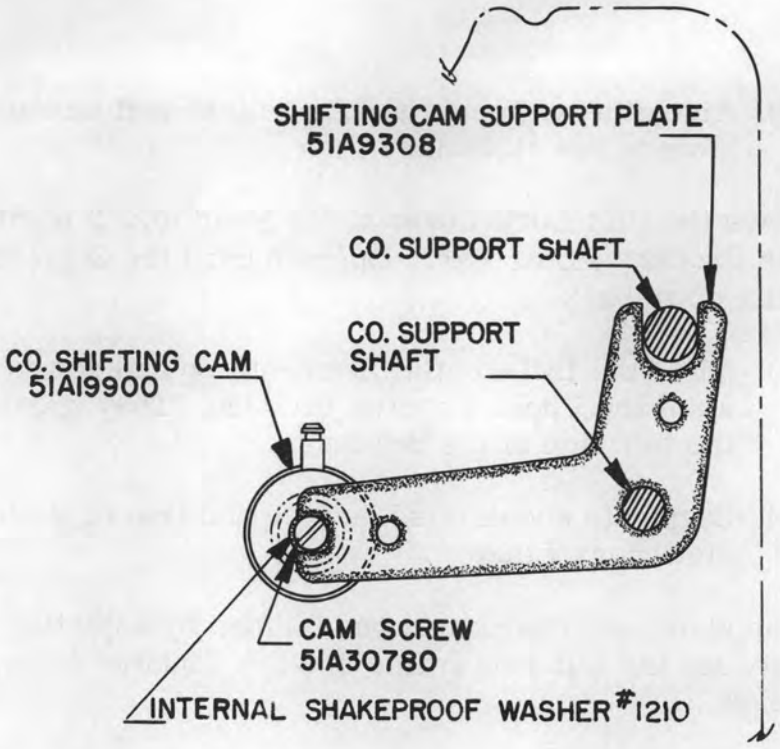
4. The above conditions can be obtained by adjusting the spacers between the left side frame and left Counter frames as described below.

(a) To move either the Upper Counter or Lower Counter to the left, file off the corresponding spacer.

To move either Counter to the right, add washers between the Spacer and the left Side Frame.

If desired, the spacers listed below can be used to make the above adjustment.

51A819	Counter Spacer	.515
51A820	Counter Spacer	.520
51A821	Counter Spacer	.525
51A822	Counter Spacer	.530
51A823	Counter Spacer	.535
51A824	Counter Spacer	.540
51A825	Counter Spacer	.545



5. Meshing of Counter Shifting Cam in Counter Shifting Segment.

   (a) The Counter Shifting Cam should mesh as deep as possible with the Counter Shifting Segment without binding.

   (b) To adjust, peen the Shifting Cam Support Plate to increase depth of mesh.

Step 13

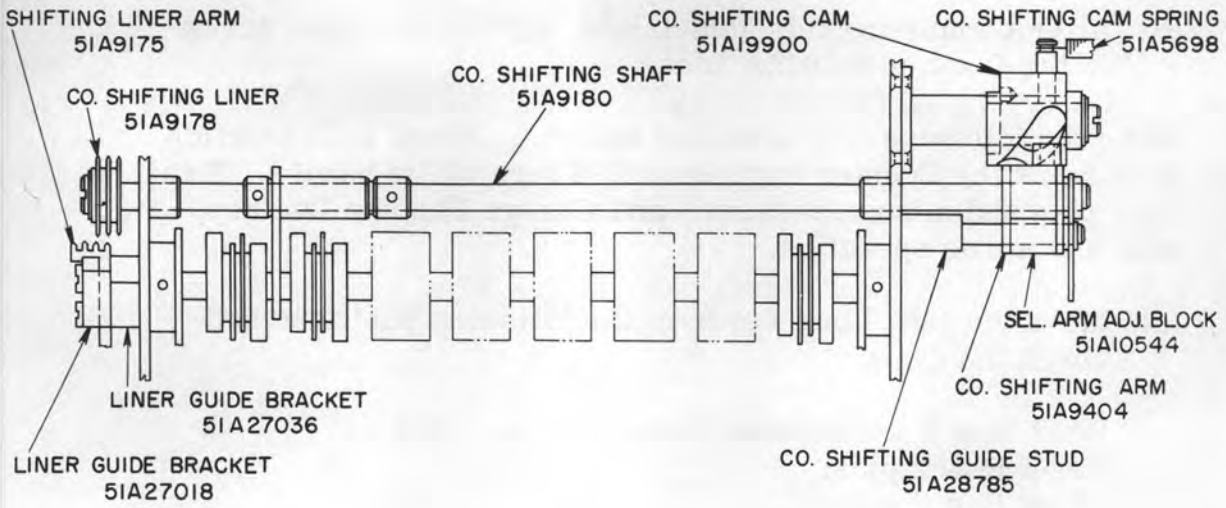
Lower Counter Draw Adjustments

1. Use the Grocery Motor Bar and operate until the Counter has been fully shifted. Look at the Counter Shifting Liner, see if there is draw as the Liner is engaged.

   There should be no draw, or not more than .010 to the right. (Draw in direction of shift)

   (a) To adjust, loosen the Allen Screw in the Counter Shifting Arm and turn Counter Shifting Shaft in or out as necessary to overcome draw.

LOWER COUNTER SHIFTING
(C-52)



CAUTION

Do not loosen the screws that hold the Shifting Liner on the Counter Shifting Shaft.

2. Operate, using the Amount Tendered key, until the Counter is shifted. As the Shifting Liner Arm moves into the Liner, check the draw.

   (a) As much as .010 draw is permitted in the direction of shift but none is permitted in the opposite direction.

   (b) If the Counter is drawing against the Shift, adjust by again turning the Counter Shifting Shaft. This will increase the Draw, when using an Item key but in the direction of Shift, which is permitted.

   (c) If the Counter Shifting Shaft bottoms in the Shifting Arm, before the Draw is overcome, it will be necessary to remove the upper Support Shaft and Counter Spacers, and rock the Counter Shifting Cam out of mesh with the Segment.

   Turn the Counter Shifting Shaft until it bottoms in the Shifting Arm and then back the Shaft out 1-1/8 turns. Time the Counter Shifting Cam with the Segment (step 10) and rock the Counter back into mesh and replace the Support Shaft and Spacers.

(1) Repeat Draw adjustments in Item 1 and 2 of this step.

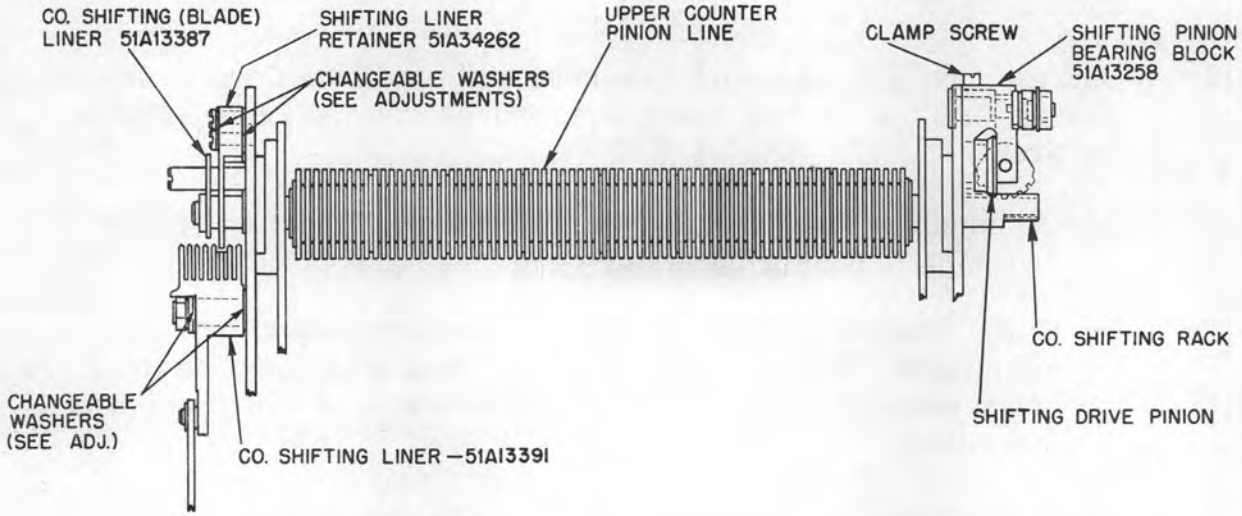
(d) After completing this adjustment, tighten the Allen screw in the Counter Shifting Arm.

2. Make the following operation and note the amount and direction of draw as the Counter engages at 1/8 turn of the handle. Total key, plus and minus operation, and Change Balance Due key, plus and minus operation.

(a) Move the Unit Lock Lever to the following positions and check the draw.

Read Row 2 and depress Grocery Motor Bar.
Reset Row 2 plus.
Reset Row 2 minus.
Read Row 1.

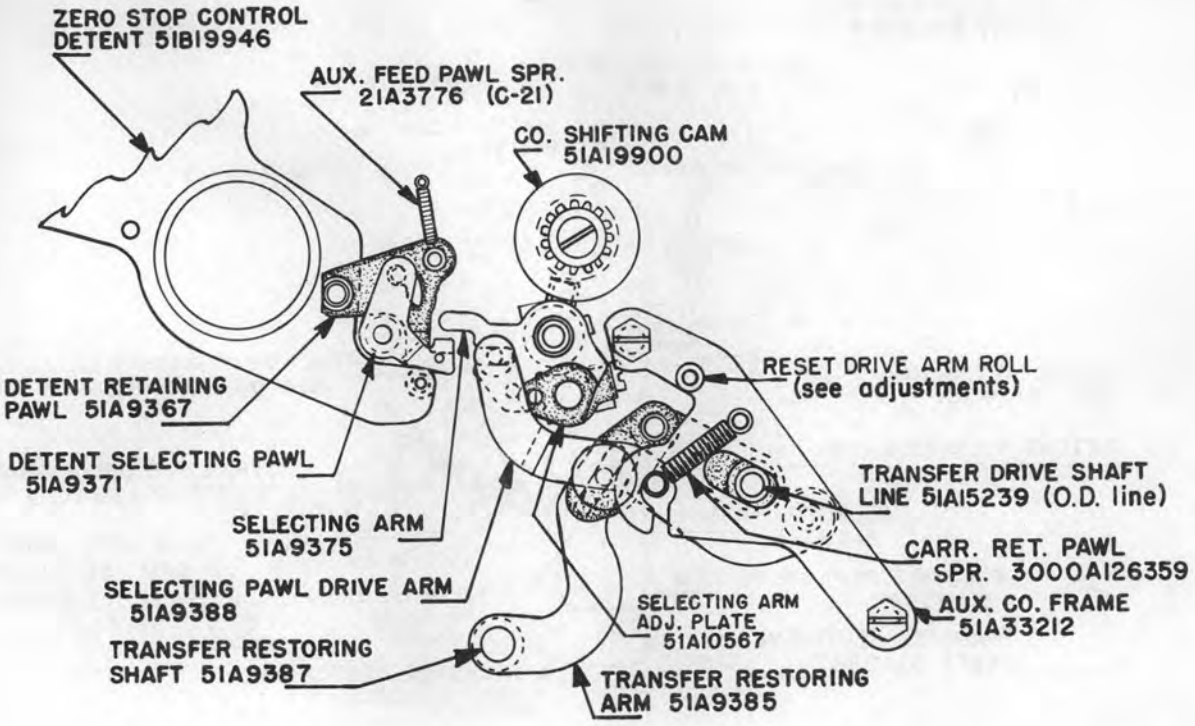
(b) Draw will be noted on some of these operations; however, if draw is excessive on one or more, it will be necessary to locate the part causing this draw and replace the part or parts.



Upper Counter Draw Adjustment

1. With the Unit Lock Lever in the Read Row 2 position, operate with each key in Row 2 and check the amount and direction of draw. As much as .010 draw is permitted in the direction of shift.

(a) To adjust, loosen lock nut on Shifting Blade Liner and turn Pinion Tube in direction necessary to overcome draw.


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
RESET DRIVE ARM ROLL (see adjustments)
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
SELECTING ARM 51A9375
CARR. RET. PAWL SPR. 3000A126359
SELECTING PAWL DRIVE ARM 51A9388
SELECTING ARM ADJ. PLATE 51A10567
AUX. CO. FRAME 51A33212
TRANSFER RESTORING SHAFT 51A9387
TRANSFER RESTORING ARM 51A9385

Step 14

Selecting Arm and Zero Stop Control Detent Adjustments

1. To check the Selecting Arm for proper alignment with the Detent Selecting Pawl, depress the Amount Tendered key and operate to one turn of the handle. Manually trip the OD Line and operate to 1-1/2 T. O. H. or until the Selecting Arm starts down. The Selecting Arm should line up with the Detent Selecting Pawl.

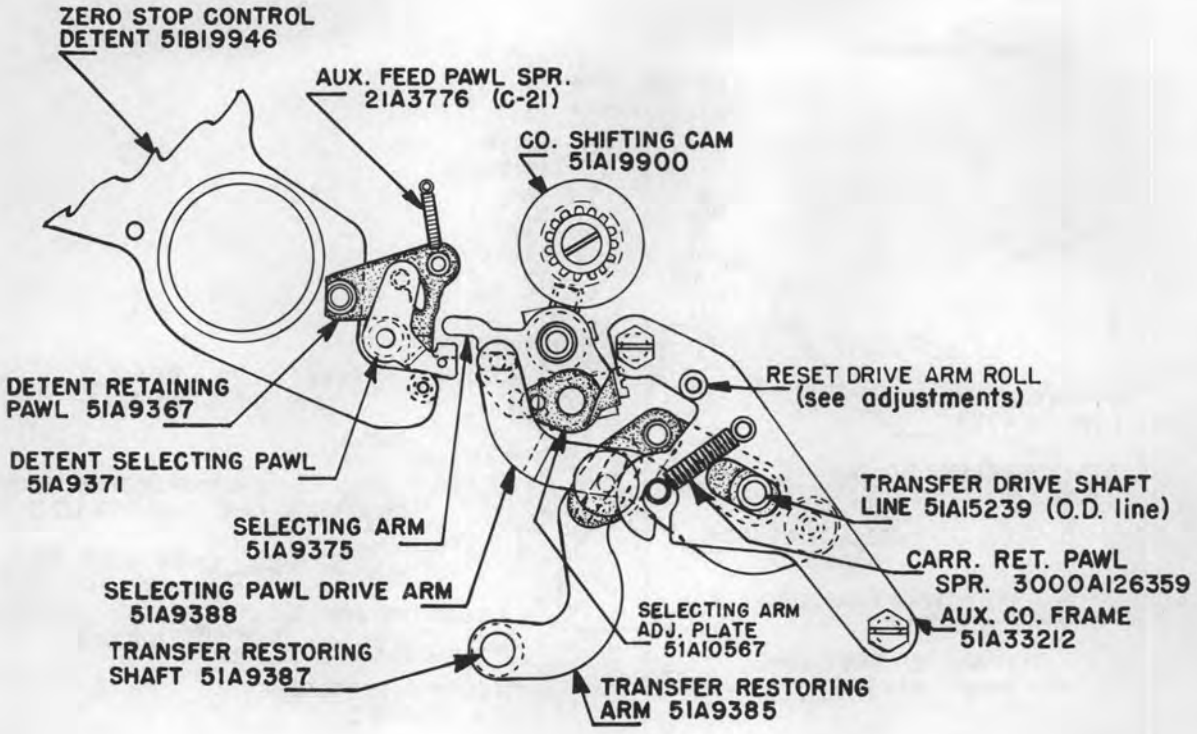
NOTE:

The alignment of the Selecting Arm with the Detent Selecting Pawl can be observed through a hole in the right side frame.

(a) To adjust, loosen the Receipt Paper Knife Screw, in the Selecting Arm adjusting plate, and move the Selecting Arm to line up with the Selecting Pawl and tighten the screw.

2. The Selecting Arm should line up with the Detent Retaining Pawl on a Plus Operation.

(a) Depress an Item Key and operate to 1 T. O. H. Manually trip the Overdraft Line and operate to approximately 1-1/2 T. O. H. As the Selecting Arm moves down, it should be aligned with the Detent Retaining Pawl.


ZERO STOP CONTROL DETENT 51B19946
AUX. FEED PAWL SPR. 21A3776 (C-21)
CO. SHIFTING CAM 51A19900
DETENT RETAINING PAWL 51A9367
DETENT SELECTING PAWL 51A9371
SELECTING ARM 51A9375
SELECTING PAWL DRIVE ARM 51A9388
TRANSFER RESTORING SHAFT 51A9387
RESET DRIVE ARM ROLL (see adjustments)
TRANSFER DRIVE SHAFT LINE 51A15239 (O.D. line)
CARR. RET. PAWL SPR. 3000A126359
AUX. CO. FRAME 51A33212
SELECTING ARM ADJ. PLATE 51A10567
TRANSFER RESTORING ARM 51A9385

It may be necessary to readjust the Selecting Arm.

The arm should have a half-hold or better on both the Detent Selecting Pawl and the Detent Retaining Pawl.

3. The following tests are to insure the proper lead to the Zero Stop Control Detent up the bank and the unlatching of the Detent.

(a) With the Zero Stop Control Detent up the bank, press the Refund key and operate to 1 T. O. H. Trip the Overdraft Line manually and continue to operate and watch the Detent Selecting Pawl.

The Selecting Arm should contact the Selecting Pawl and give it a slight movement down. This movement is "lead" which insures the latching of the Detent Retaining Pawl over the Detent Selecting Pawl.

(b) With the Zero Stop Control Detent down in front, trip the machine with an Item key and operate to 1 T. O. H. Manually trip the Overdraft Line and operate to 1-1/2 T. O. H. The spring stud on the Detent Retaining Pawl should receive a slight down movement.

This insures that the Detent Selecting Pawl will be unlatched by the Retaining Pawl.

4. If no lead was indicated on these two tests, trip the machine, using an Item key and operate to 1 T. O. H. Manually trip the Overdraft Line and operate until the Selecting Arm has received its full movement down in front.

Use a spring hook or Scriber, through the hole in the side frame, and push the Selecting Arm down in front.

If the Selecting Arm cannot be moved down further, it is bottoming on the Selecting Arm Adjusting Plate. It will then be necessary to remove the Selecting Arm and grind some stock off the back of the bottom front extension of this arm to allow more down movement.

CAUTION:

Remove only as much stock as is necessary to get lead.

5. If the Selecting Arm can be moved down further with a scriber, it is not receiving enough carry from the Selecting Pawl Drive Arm.

(a) To adjust, replace the Reset Drive Arm Roll to give more carry to the Drive Arm and Selecting Arm.

The Rolls listed below are available for making this adjustment.

51A6811	Reset Drive Arm Roll	.238
51A6812	Reset Drive Arm Roll	.248
51A7186	Reset Drive Arm Roll	.265
51A7187	Reset Drive Arm Roll	.281
51A7188	Reset Drive Arm Roll	.296
51A7190	Reset Drive Arm Roll	.328
51A7191	Reset Drive Arm Roll	.343

CAUTION:

When replacing the Reset Drive Arm Roll, a Roll should be selected that will bottom the Selecting Arm and torque the Selecting Pawl Drive Arms slightly. Larger rolls only increase the torque and could loosen studs in the Counter Support Frame.

6. Clear the Crossfooter and make an operation that will trip the Overdraft Line. Watch the Selecting Link as the Overdraft Line trips.

The long Stud in this link should not contact the adjustable roll on the auxiliary Counter Frame with pressure.

(a) If the above condition should exist, remove the pin from the Transfer Drive Arm, on the left end of the O. D. line, and turn the arm over.

Grind some stock off of the surface contacted by the Transfer Trip Arm Stud to decrease carry.

CAUTION:

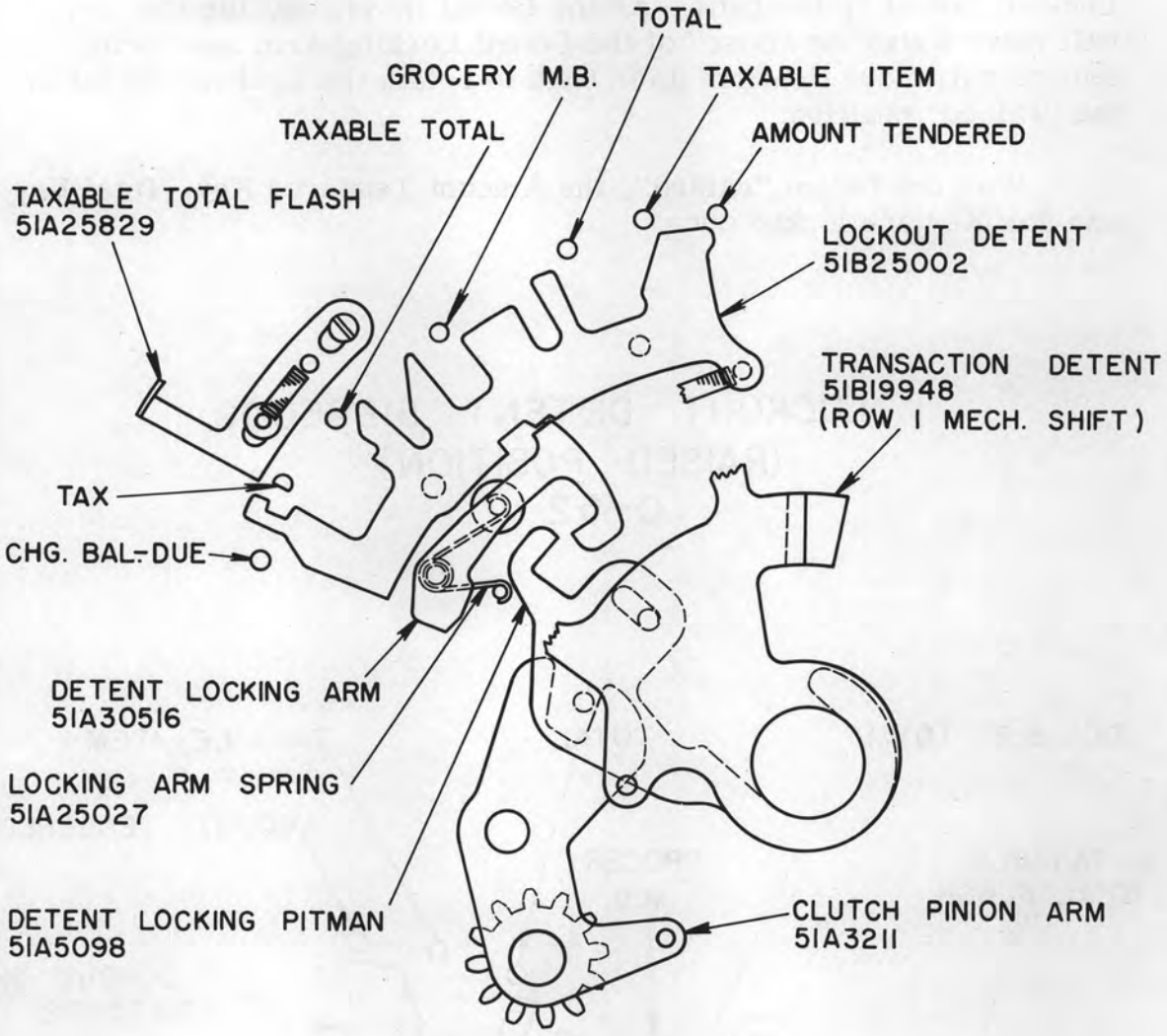
Lead in tripping the Penny Transfer must be retained. Also, the Overdraft Line must be free.

7. Operate to 1 T. O. H. on a Read Group Operation. Manually trip O. D. Line to operate home slowly matching Selecting Link Stud to be sure that is passes over Pie-Shaped Stud.

(a) If Selecting Link Stud balls-up on or passes under Pie-Shaped Stud, broach the Drive Shaft Selecting Arm.

SECTION "J"

LOCKOUT DETENT 51B25002
(INTERMEDIATE POSITION)
C-52



KEY LOCKOUTS

LOCKOUT DETENT 51B25002

The Lockout Detent is swung on the Motorized Detent 51B28026 and under spring tension down the bank.

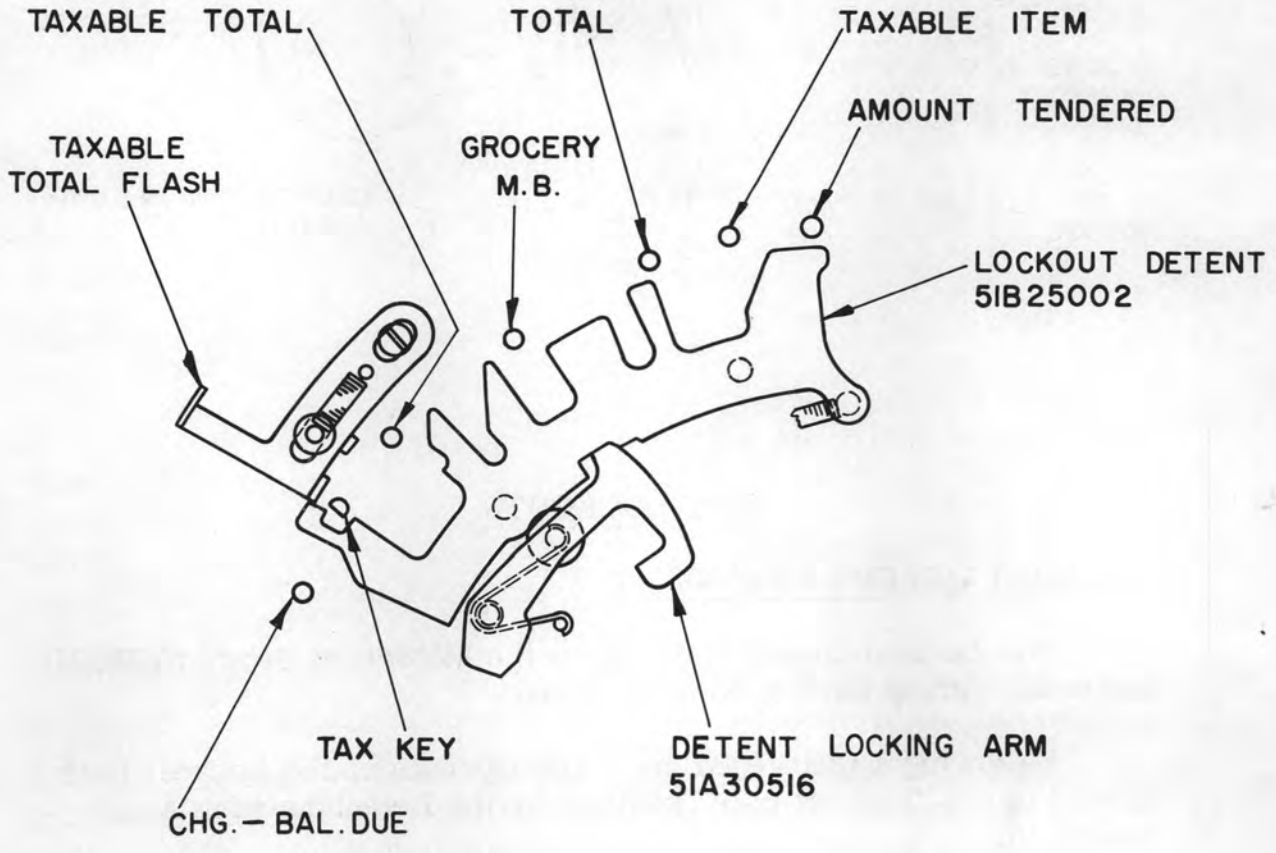
Following a Change Balance-Due Operation, the Lockout Detent is held in the "intermediate" position by the Detent Locking Arm 51A30516.

In this position, the locking surfaces of the Detent are under the Taxable Total Key and Amount Tendered Key, locking them out.

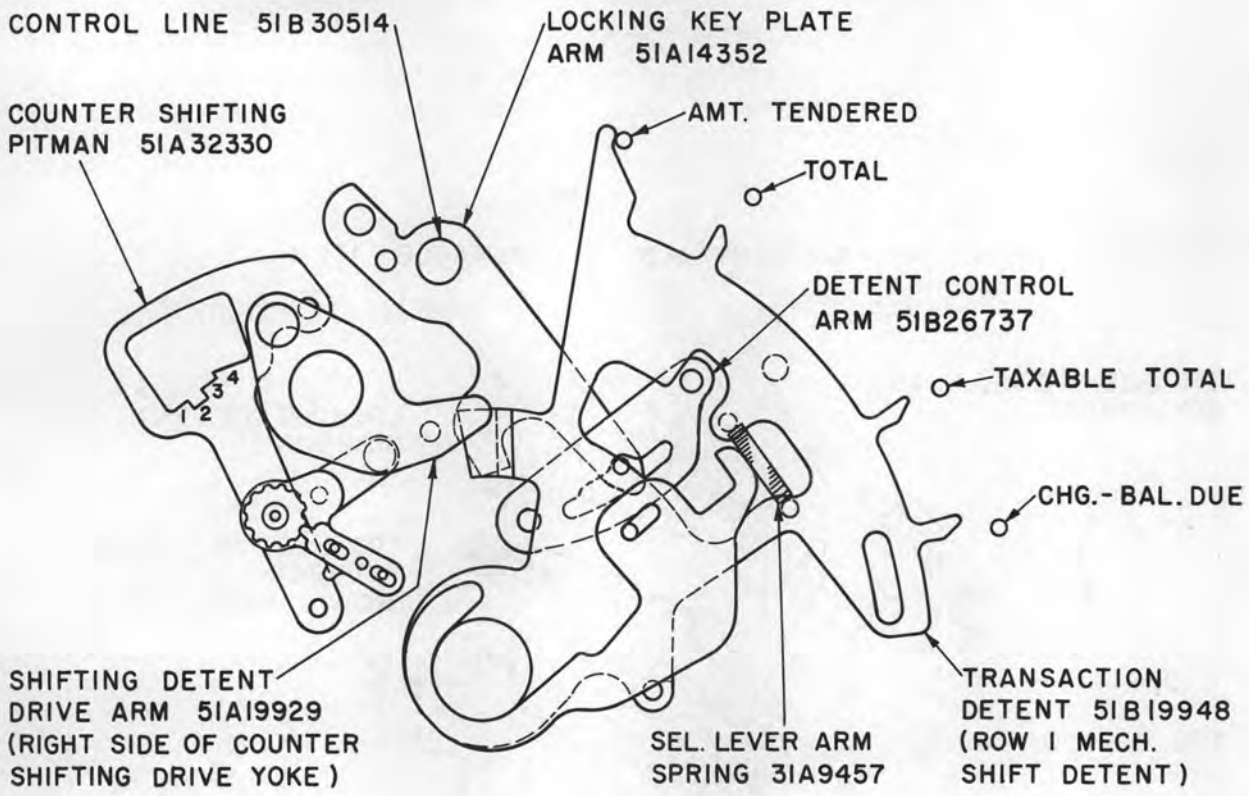
When the Taxable Item Key is used, the Key Pin will cam the Lockout Detent up the bank. As the Detent moves up, the low step will move above the "nose" of the Detent Locking Arm and spring tension will move the Arm up in back to retain the Lockout Detent in the "raised" position.

With the Detent "raised", the Amount Tendered Key, Total Key and Tax Key are locked out.

LOCKOUT DETENT 51B25002
(RAISED POSITION)
C-52



Also as the Lockout Detent moves up, the bottom extension will contact the Taxable Total flash and carry it up to indicate that a Taxable Item operation has been made.


CONTROL LINE 51B30514
LOCKING KEY PLATE ARM 51A14352
COUNTER SHIFTING PITMAN 51A32330
AMT. TENDERED
TOTAL
DETENT CONTROL ARM 51B26737
TAXABLE TOTAL
CHG.-BAL. DUE
1 2 3 4
SHIFTING DETENT DRIVE ARM 51A19929 (RIGHT SIDE OF COUNTER SHIFTING DRIVE YOKE)
SEL. LEVER ARM SPRING 31A9457
TRANSACTION DETENT 51B19948 (ROW 1 MECH. SHIFT DETENT)

When the Taxable Total Key is used, the Key Pin will cam the Row 1 Mechanical Shift Detent up the bank, taking up the "gap" between the Detent and the Stud in the Shifting Detent Drive Arm.

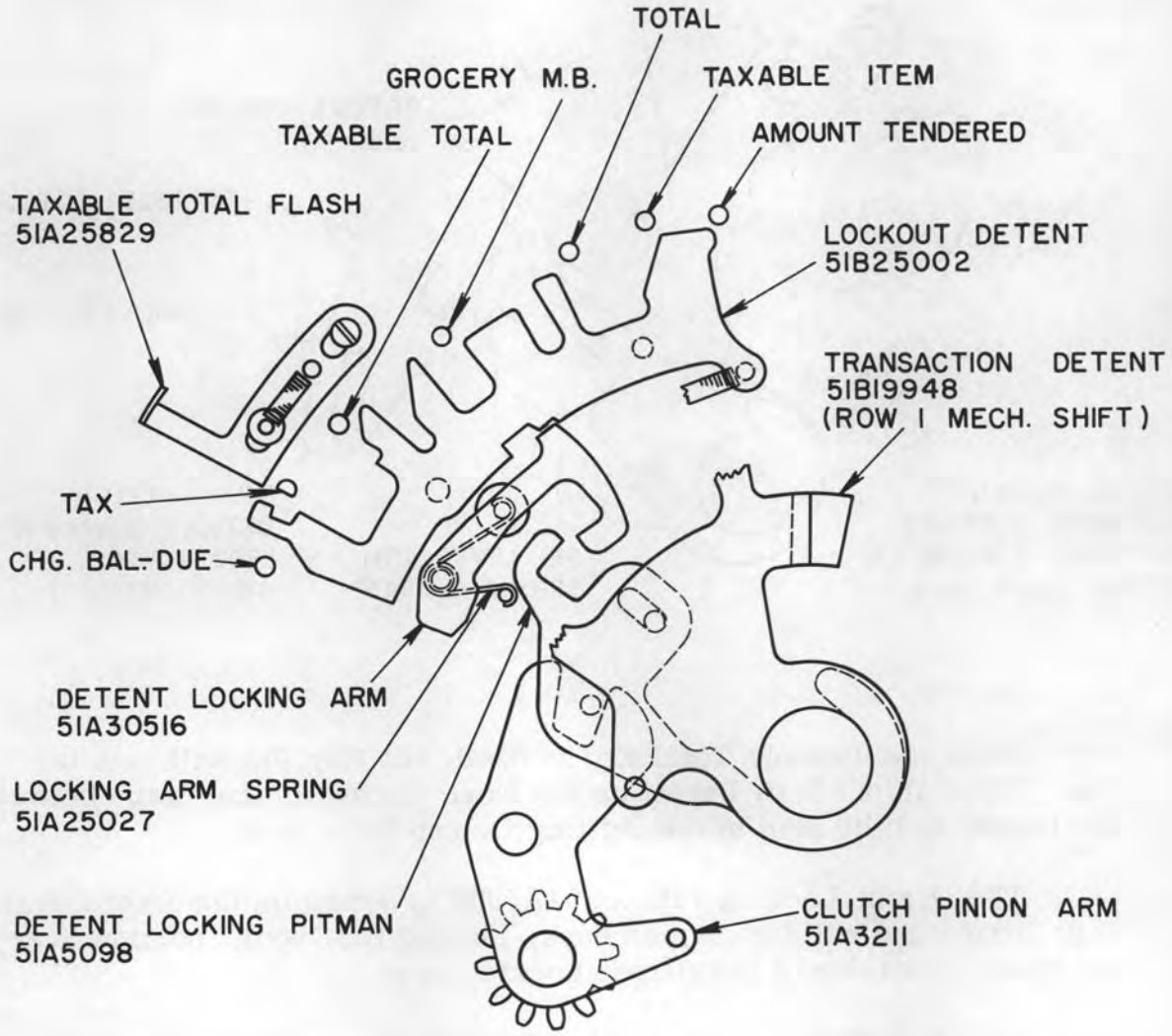
The Detent Locking Pitman 51A5098 is swung on the Mechanical Shift Detent and will be carried back, placing the "hook" portion over the lower extension of the Detent Locking Arm.

At 1/8 T. O. H., as the Clutch Pinions are carried out of mesh, the Clutch Pinion Arm will move top to the back and contact the Stud in the Detent Locking Pitman. This will move the pitman and Detent Locking Arm down, releasing the Lockout Detent.

Spring tension will now pull the Detent down the bank until an extension contacts the Taxable Total Key Pin.

At 1/2 T. O. H., as the Clutch Pinions are meshed with the Differential Segments, spring tension will restore the Detent Locking Arm against the center step of the Lockout Detent.

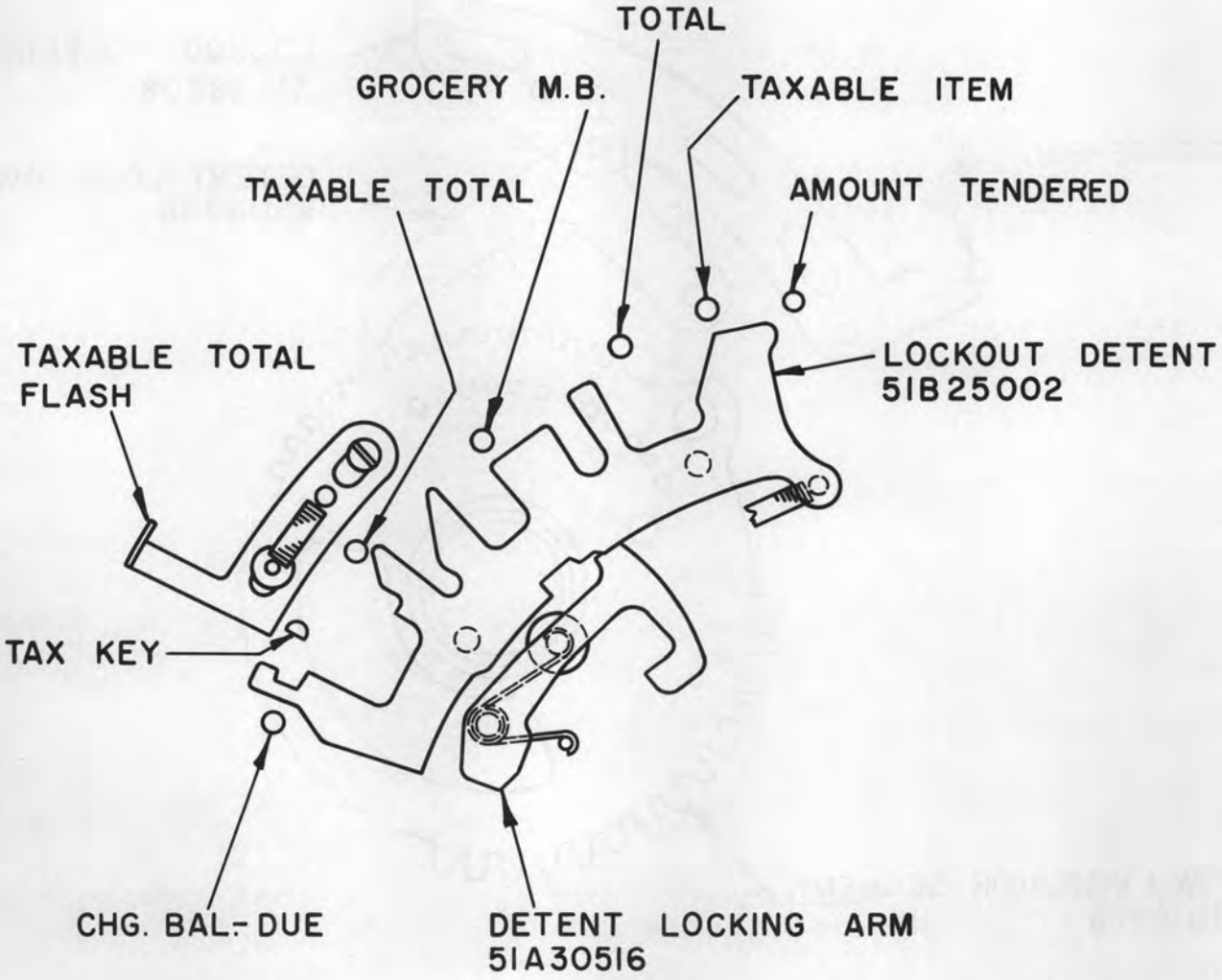
When the Taxable Total Key restores, the Lockout Detent is retained in its "intermediate" position, locking out the Amount Tendered Key and Taxable Total Key. Also as the Lockout Detent moved to the "intermediate" position, spring tension restored the Taxable Total Flash.



When the Total Key is used, the Row 1 Mechanical Shift Detent will again be cammed top to the back, latching the Detent Locking Pitman over the Detent Locking Arm.

At 1/8 T. O. H., as the Clutch Pinions are carried out of mesh, the Detent Locking Arm will be carried down away from the Lockout Detent. Spring tension will now pull the Lockout Detent fully down the bank to its' "lowered" position. After this operation, the Grocery M. B., Taxable Item Key and Taxable Total Key are locked out. The Amount Tendered Key is unlocked.

LOCKOUT DETENT 51B25002
(LOWERED POSITION)
C-52

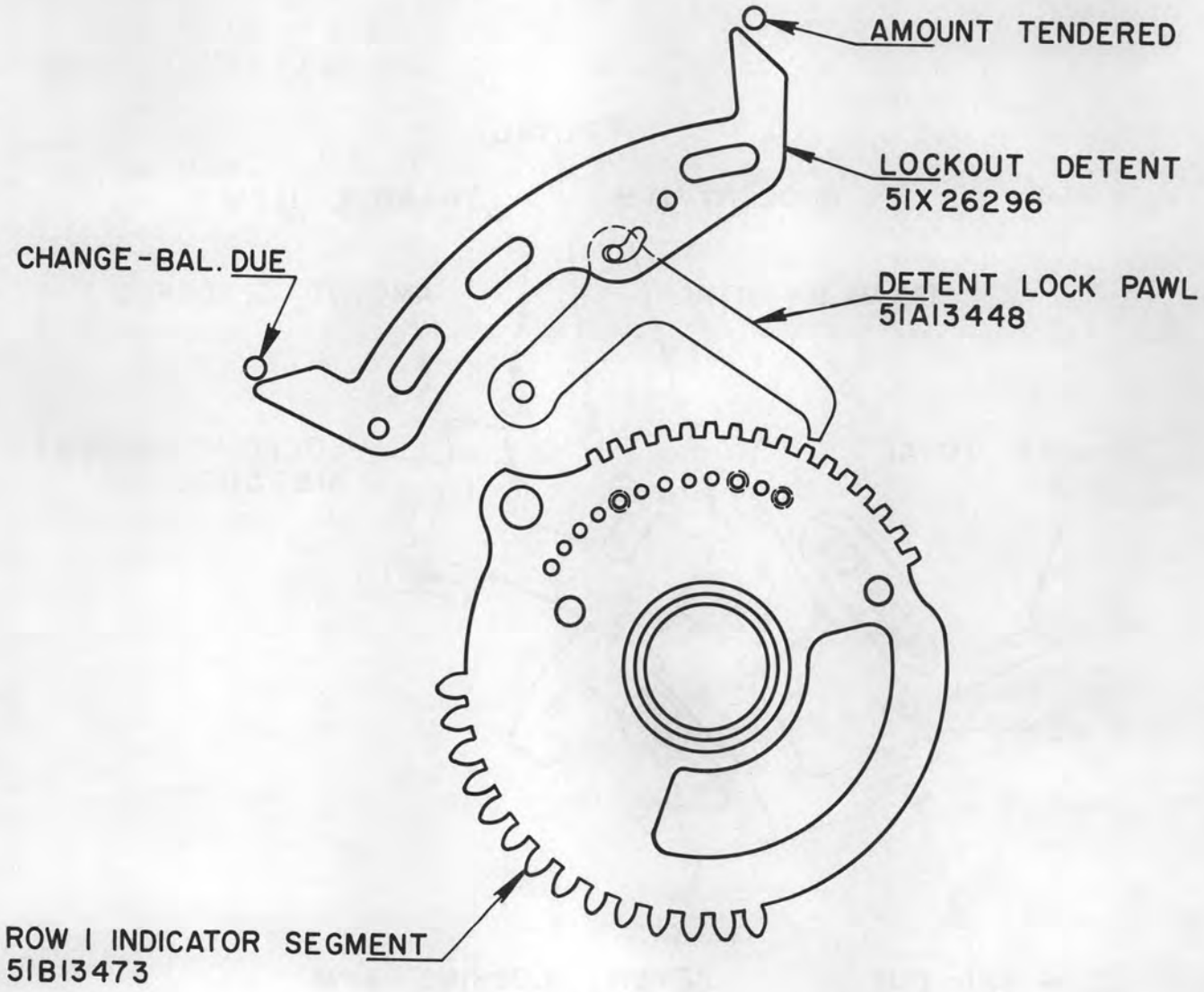


When the Change Balance-Due Key is used, the key pin will cam the Lockout Detent up to the "intermediate" position where it is retained by the Detent Locking Arm.

As has been stated, following a Total Operation the Grocery M. B. and Taxable Total Key are locked out. However, the Taxable Total Key can be pressed part way which will cam the Lockout Detent up to the "intermediate" position, unlocking the Grocery M. B. for additional Items to be registered.

If this is done, it will be necessary to make another Total operation to unlock the Amount Tendered Key.

LOCKOUT DETENT
(C-52)



CHANGE BALANCE DUE AND AMOUNT TENDERED LOCKOUTS

The Change Balance-Due and Amount Tendered Keys will be locked out by the Lockout Detent 51X26296, whenever Row 1 Indicator Segment is stopped in the 4th, 9th or 11th positions.

When either key is pressed, the Key Pin will cam the Lockout Detent 51X26296 down the bank. The high part of the Raceway, that yokes the stud in the Detent Lock Pawl, will cam the pawl down in back. If one of the studs in the Row 1 Indicator Segment is positioned under the Detent Lock Pawl, the Lock Pawl will be stopped, preventing the key being fully depressed.

This Lockout is necessary at the following time:

1. Locks out the Change Balance Due Key, following a Taxable Item operation.

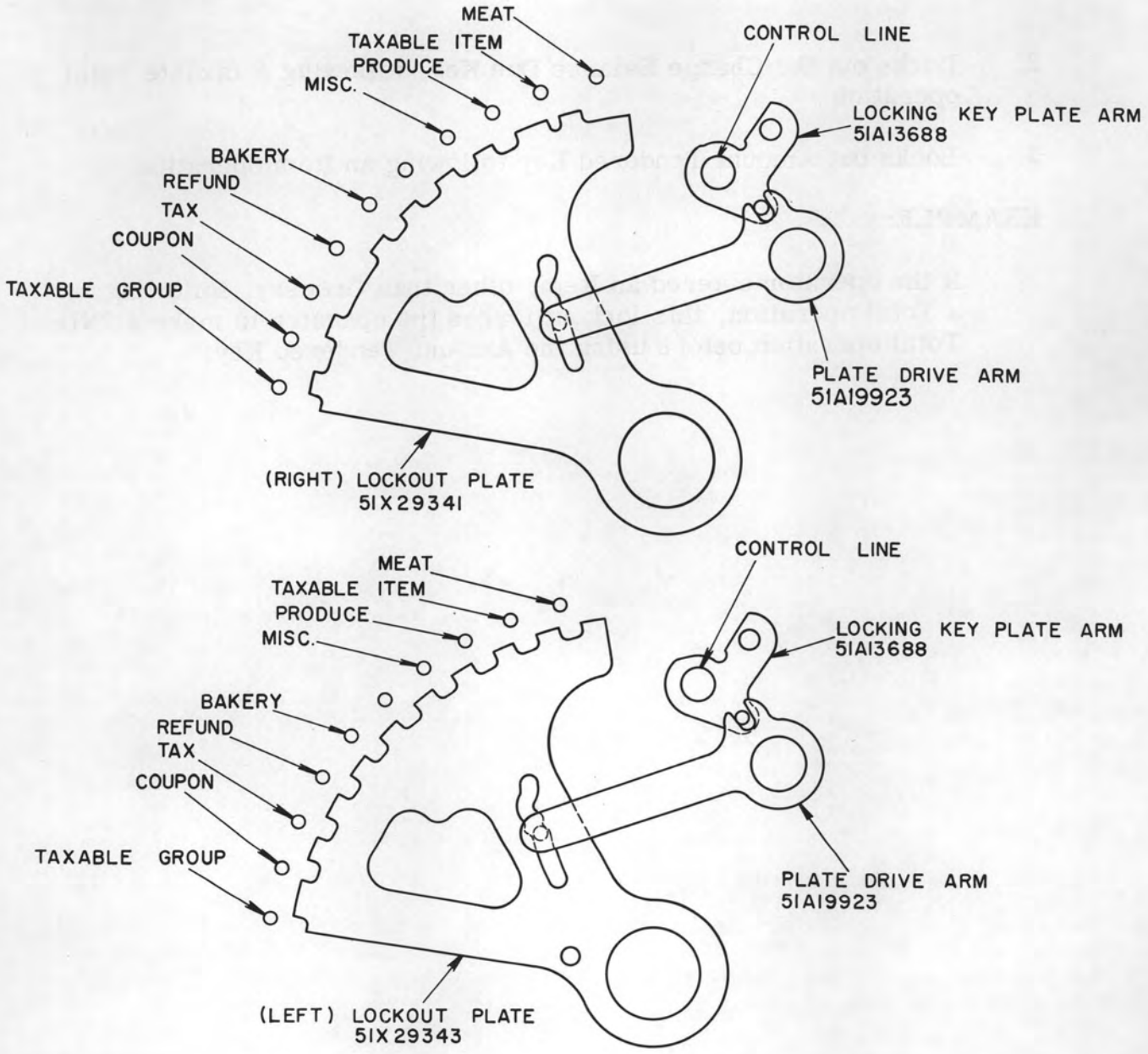
2. Locks out the Change Balance Due Key, following A taxable Total operation.

3. Locks out Amount Tendered Key following an Item operation.

EXAMPLE:

If the operator entered an Item, other than Grocery, following a Total operation, this lockout forces the operator to make a 2ND. Total operation before using the Amount Tendered Key.

ROW 2 LOCKOUT PLATES
C-52



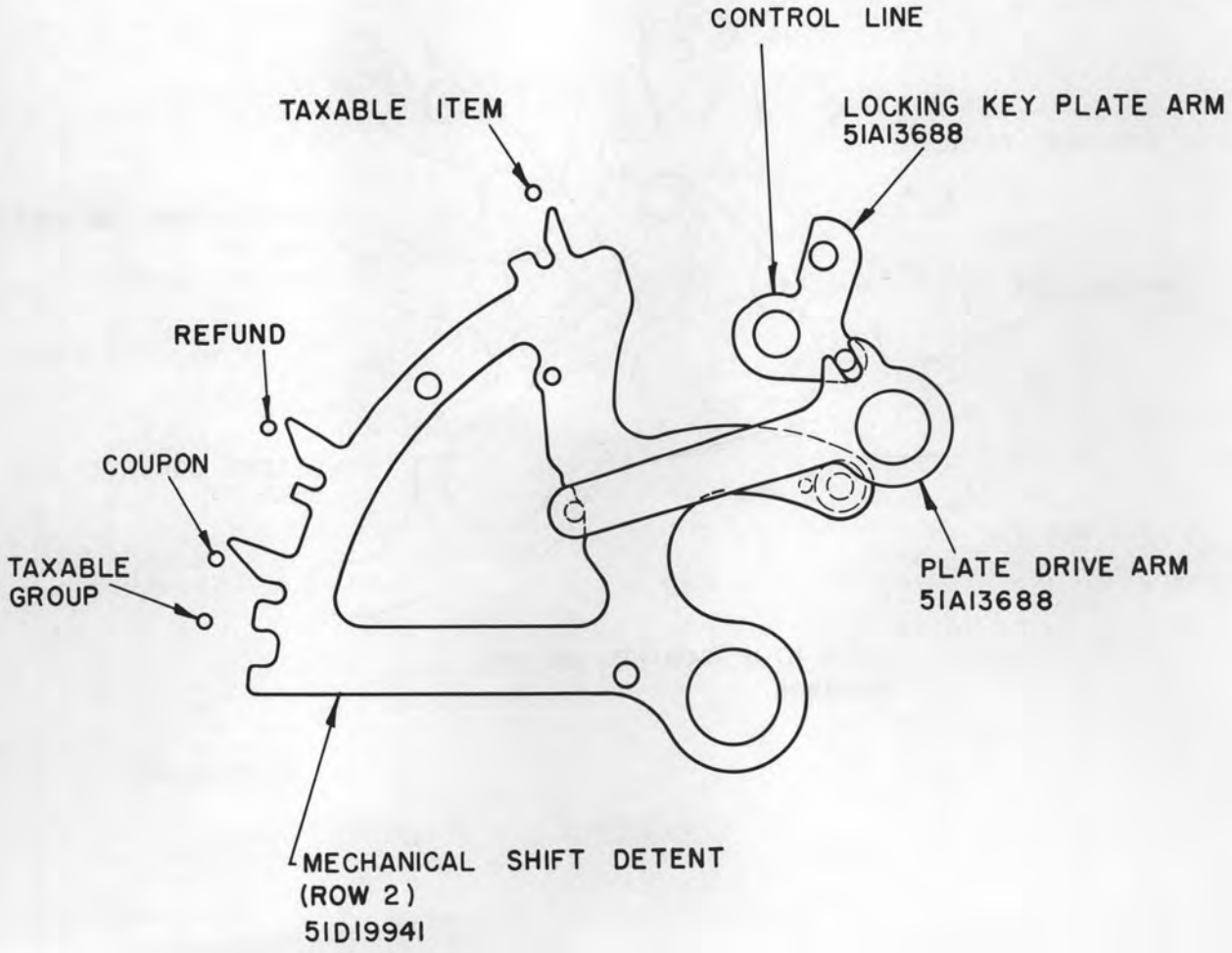
ROW 2 LOCKOUTS

With the Unit Lock Lever in Register, the Taxable Group Key is locked out by the high surfaces of the Lockout Plates 51X29343 and 51X29341.

When the Unit Lock Lever is moved to Read Row 2, the Control Line is turned top to the front. Through the connection of the Locking Key Plate Arm 51A13688, the Plate Drive Arm 51A19923 will be raised up in front.

The stud in the front of the Drive Arm extends through the Raceways of the two Lockout Plates, 51X29343 (left) and 51X29341 (right), and will cam both plates up, unlocking the Taxable Group Key. A locking surface of the right plate will move under the Taxable Item Key Pin locking this key out.

With the Unit Lock Lever in Reset Row 2 Minus, the right Lockout Plate will receive further movement up and lock out all Row 2 Keys except Taxable Group, Coupon and Refund.

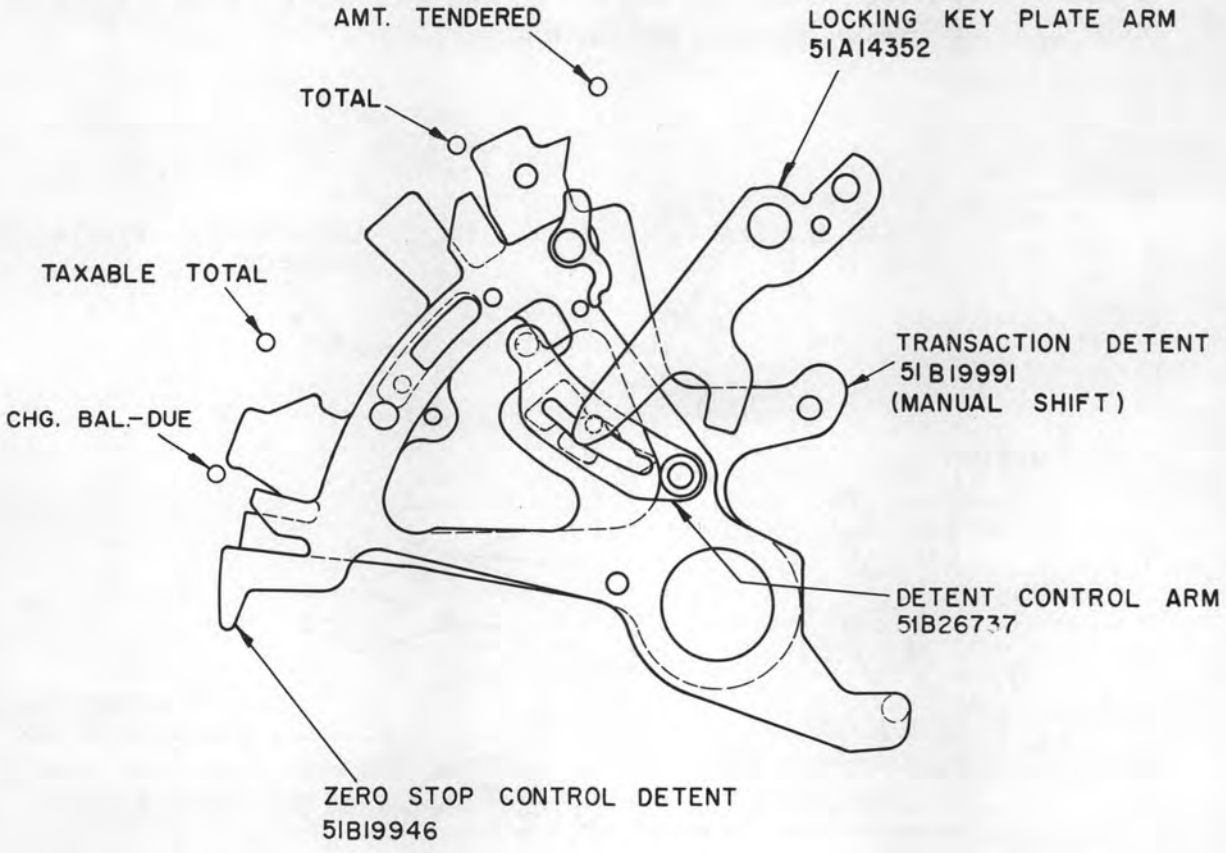


When the Unit Lock Lever is moved to Reset Row 2 Plus, the right Lockout Plate will move down, taking the locking surfaces out of the path of all Row 2 Keys except Tax Item. (The Tax Item Key is also locked out by the Row 1 Mechanical Shift Detent at this time.)

At the same time the Right Lockout Plate is moved down, the Row 2 Mechanical Shifting Detent is carried up by the stud in the Plate Drive Arm, placing locking surfaces under the Taxable Group, Refund, and Coupon Keys.

With the Unit Lock Lever in Lock Register and Read Group position, the left Lockout Plate is cammed down, by the Plate Drive Arm, placing locking surfaces under all Row 2 Keys.

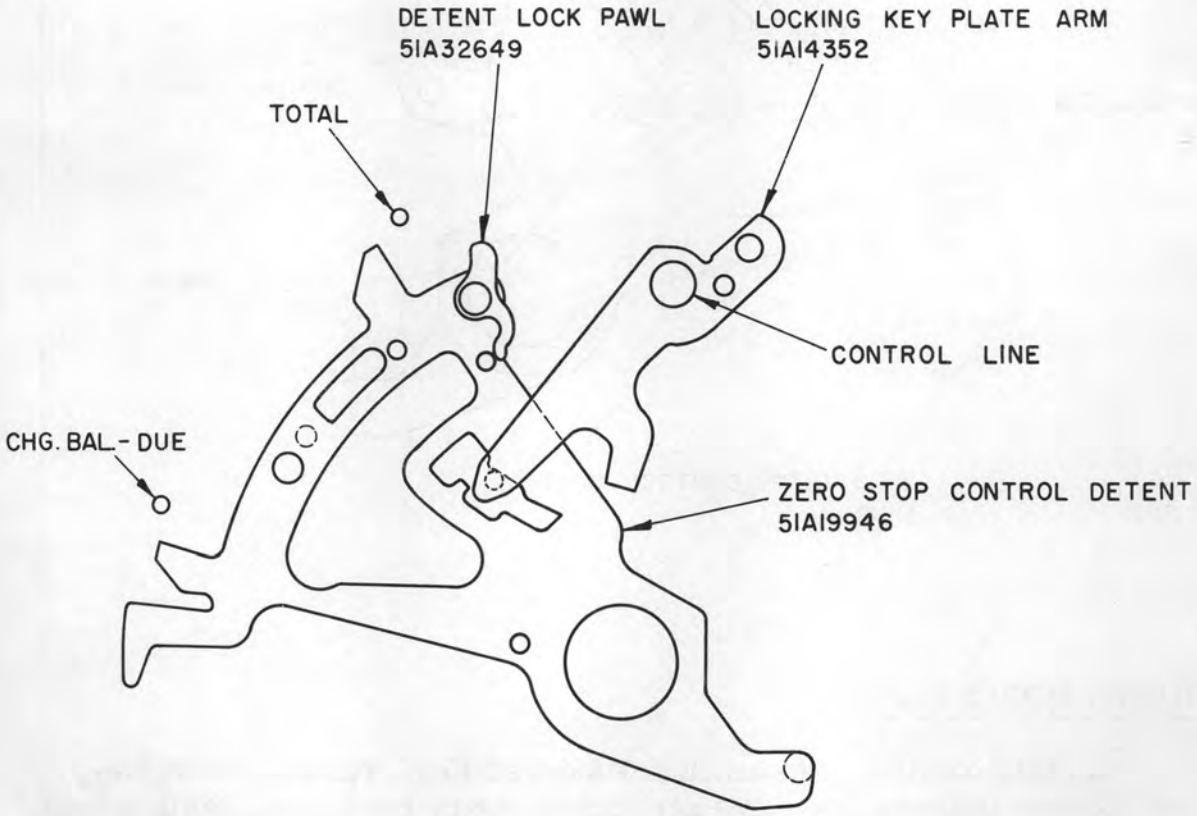
In the Read group position, the Row 1 Mechanical Shift Detent also locks out the Taxable Item Key.



ROW 1 LOCKOUTS

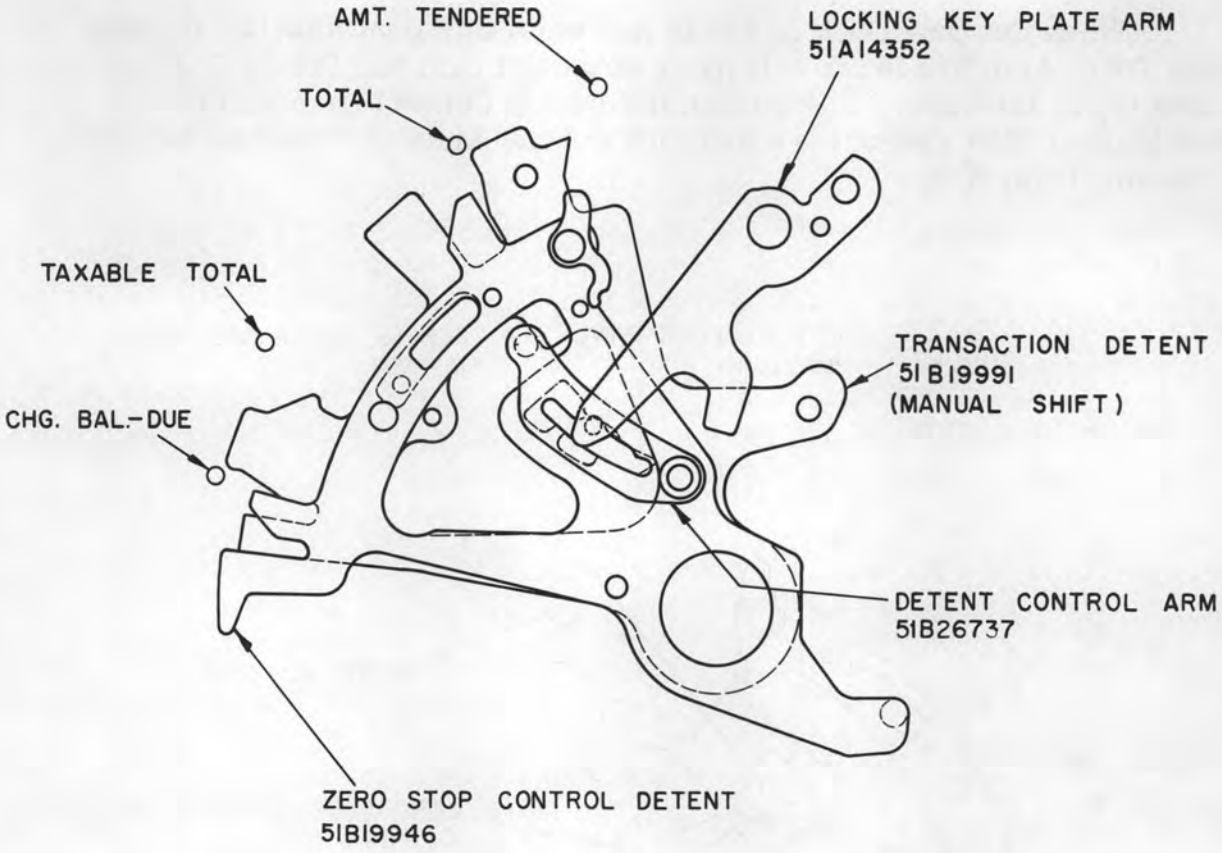
READ ROW 2 POSITION

When the Unit Lock Lever is moved to this position, the Locking Key Plate Arm 51A14352 will move down and cam the Detent Control Arm top to the back. The stud in the Detent Control Arm will carry the Manual Shift Detent back and lock out the Amount Tendered Key and Taxable Total Key.



RESET ROW 2 MINUS POSITION

When moving the Unit Lock Lever to this position, the stud in the Locking Key Plate Arm 51A14352 will cam the Zero Stop Control Detent to the back, placing locking surfaces under the Total Key and Change Balance Due Keys.



RESET ROW 2 PLUS

In this position, the Amount Tendered Key, Taxable Total Key, and Change Balance Due Keys are locked out by the Manual Shift Detent. The camming surface on the Zero Stop Control Detent is under the Total Key. However, a slight upward movement to the Zero Stop Control Detent will bottom the Raceway on the stud in the Locking Key Plate Arm, preventing further depression of the key.

LOCK REGISTER POSITION

With the Unit Lock Lever in this position, the Manual Shift Detent is again held up, locking out the Amount Tendered and Taxable Total Keys.

The Total and Change Balance Due Keys are locked out by the Zero Stop Control Detent.

If the Zero Stop Control Detent is in the Minus position at this time, the camming surfaces will be under the Total and Change Balance Due Keys. The Detent is prevented from moving up, however, by the high part of the Raceway contacting the stud in the Locking Key Plate Arm.

READ GROUP POSITION

In this position, the Amount Tendered, Taxable Total, and Change Balance Due Keys are locked out by the Manual Shift Detent.

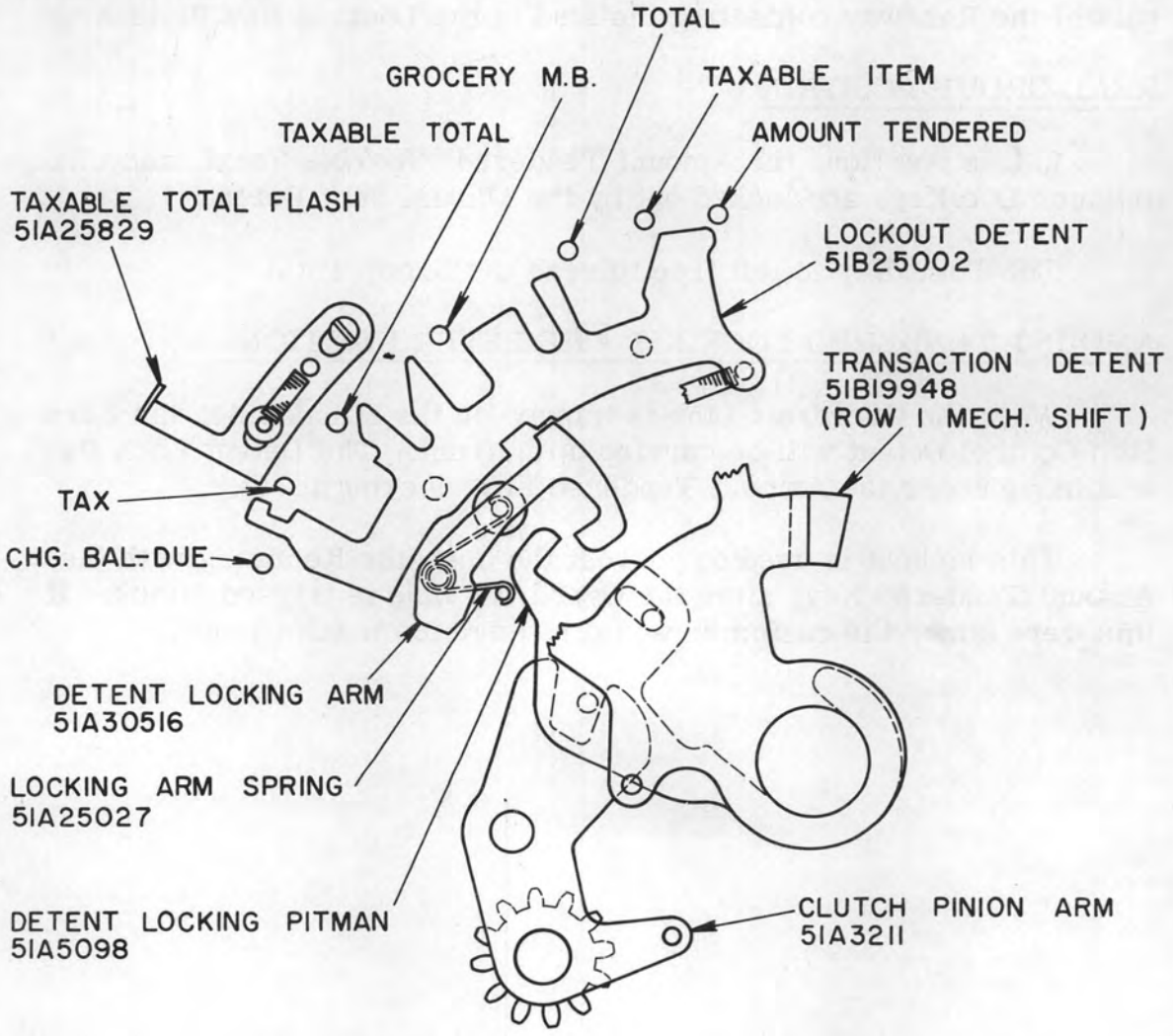
The Total Key is left free to read the Group Total.

AMOUNT TENDERED LOCKOUT - REGISTER POSITION

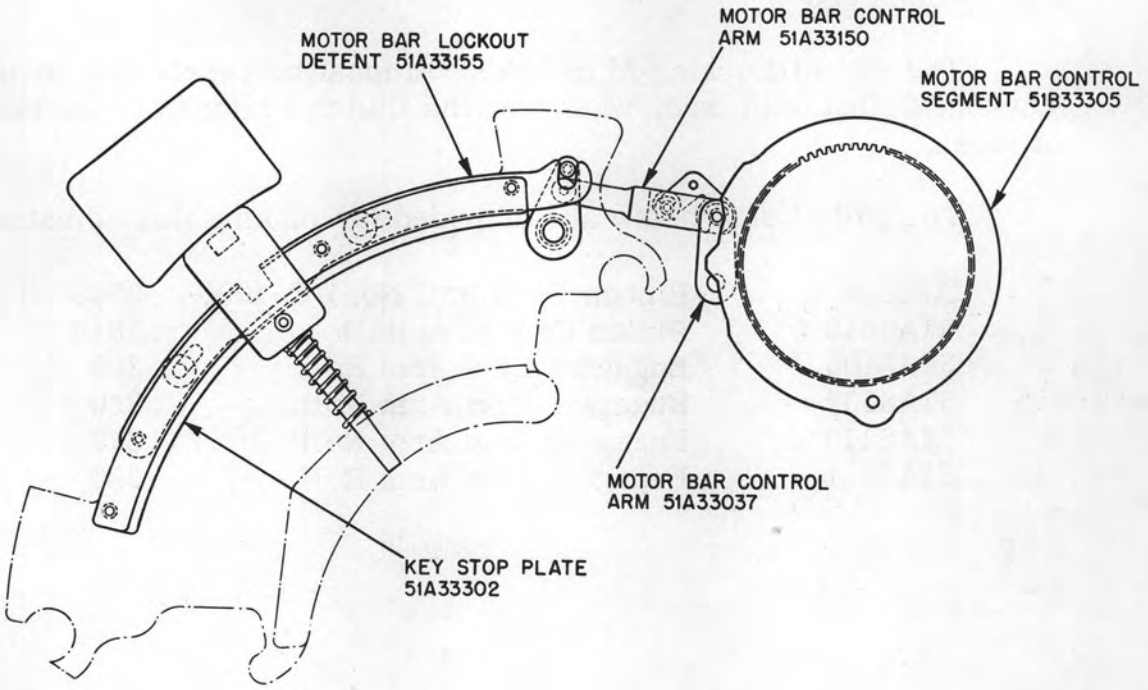
When the Overdraft Line is tripped on the Minus side, the Zero Stop Control Detent will be carried up in front. The Detent Lock Pawl will move under the Amount Tendered Key, locking it out.

This lockout is used to prevent the operator Itemizing with the Amount Tendered Key, after the Overdraft Line is tripped Minus. If this were done, the customer would receive too much change.

LOCKOUT DETENT 51B25002
(INTERMEDIATE POSITION)
C-52



GROCERY MOTOR BAR LOCK
(C-52)



Motor Bar Lock-Out Detent 51A33302

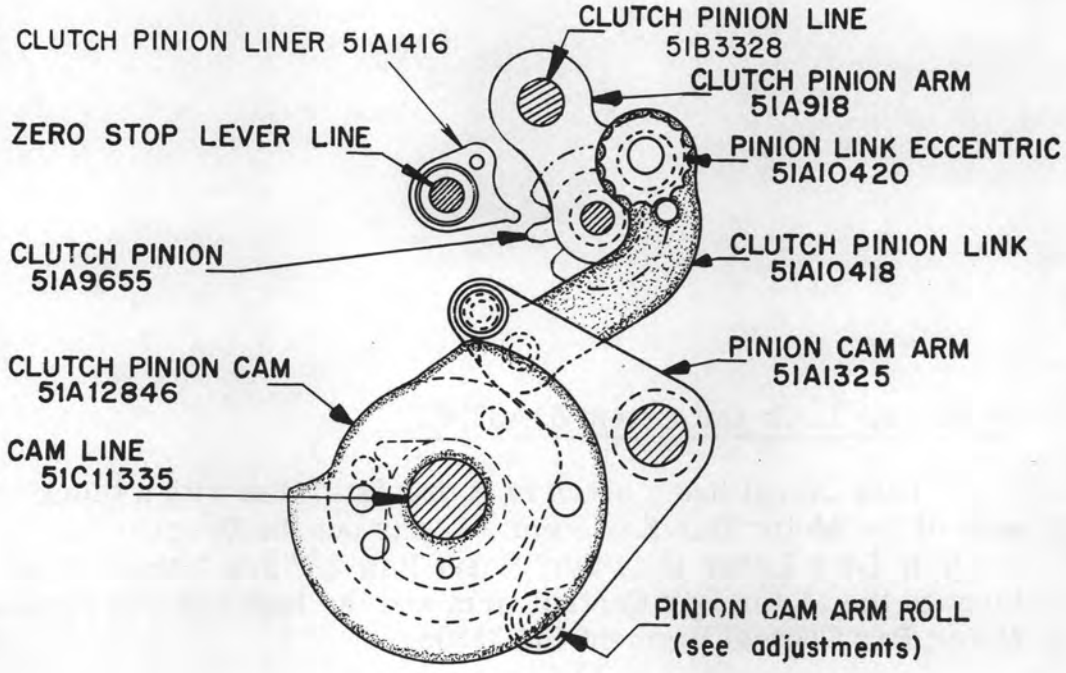
This Detent has a notch in it that is in line with a block on the left side of the Motor Bar Key Stem. Locks out the Grocery Motor Bar when the Unit Lock Lever is in the "Reset Row 2-" are "Read Group" positions through the Motor Bar Control Arm and the high and low surfaces on the Motor Bar Control Segment 51B33305.

ADJUSTMENTS

The Detent Locking Arm 51A30516 must be carried out of the Lockout Detent with lead, whenever the Clutch Pinions are carried out of mesh.

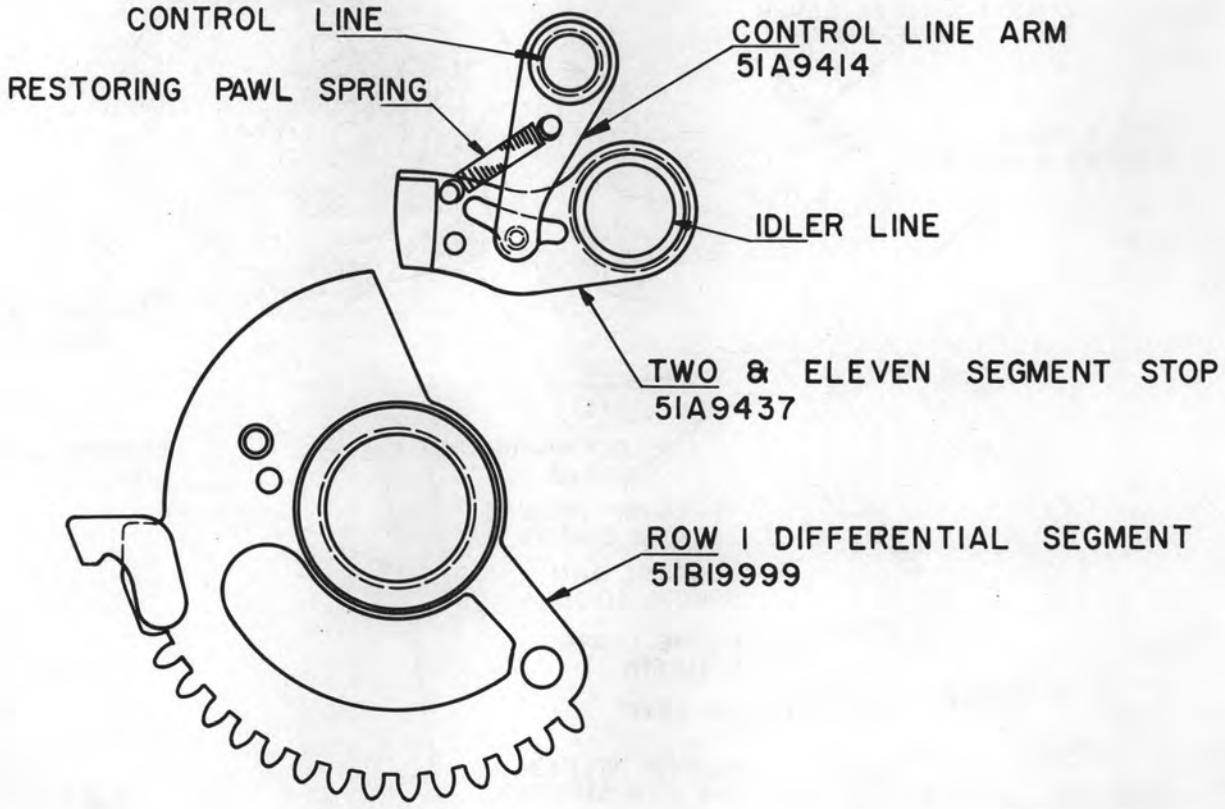
The rolls listed below are provided for making this adjustment:

A33033	Ribbon Feed Roll No. 1 C-1900	.3748
51A7618	Pinion Cam Arm Roll	.3848
51A8109	Engaging Cam Arm Roll	.390
51A8209	Engaging Cam Arm Roll	.360
51A8210	Engaging Cam Arm Roll	.370
51A8211	Engaging Cam Arm Roll	.380


CLUTCH PINION LINER 51A1416
CLUTCH PINION LINE 51B3328
CLUTCH PINION ARM 51A918
ZERO STOP LEVER LINE
PINION LINK ECCENTRIC 51A10420
CLUTCH PINION 51A9655
CLUTCH PINION LINK 51A10418
PINION CAM ARM 51A1325
CLUTCH PINION CAM 51A12846
CAM LINE 51C11335
PINION CAM ARM ROLL (see adjustments)

SECTION "K"

TWO AND ELEVEN SEGMENT STOP
(C-52)



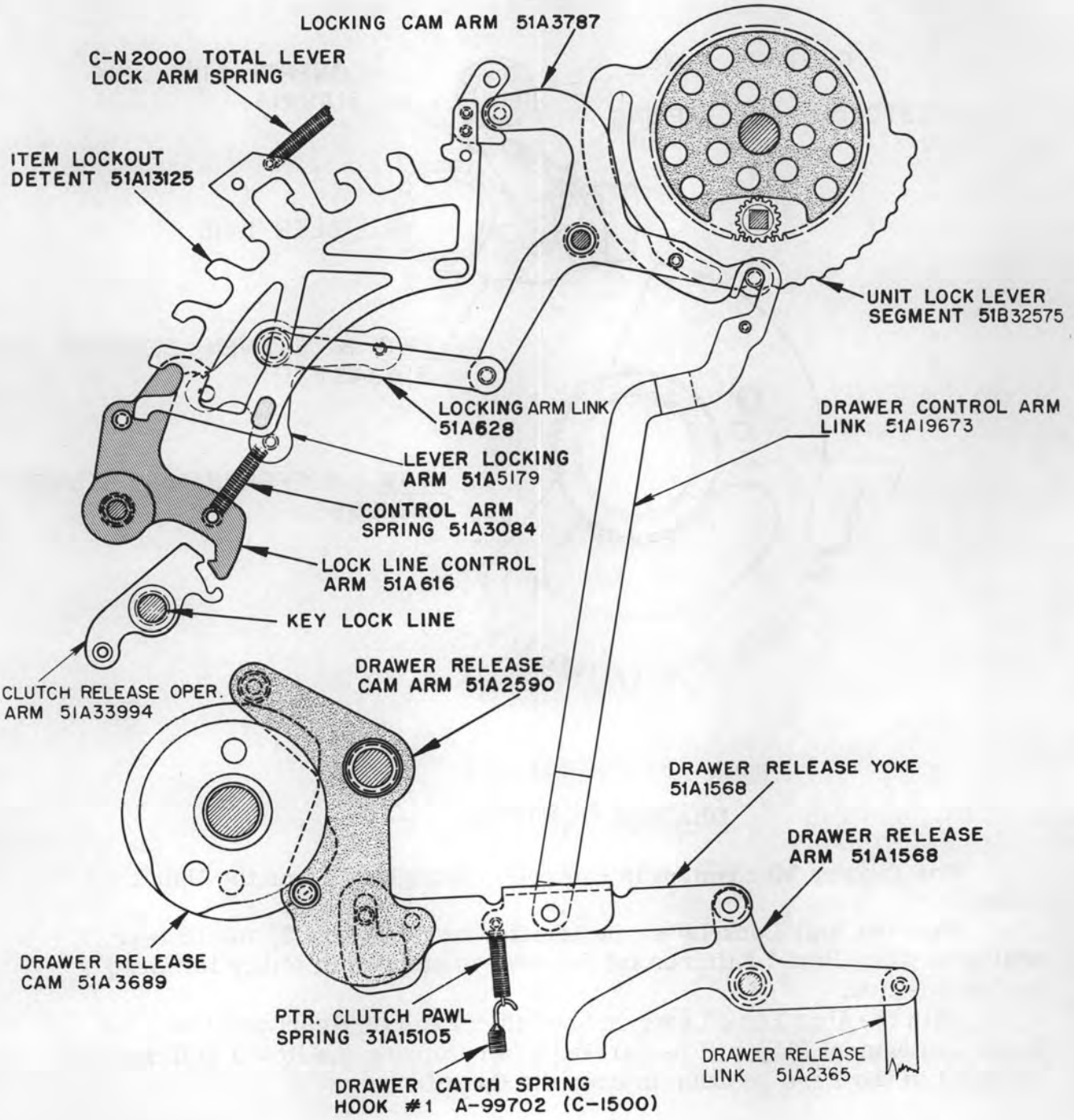
DRAWER CONTROL

The Drawer Mechanism is controlled from Row 1 and the Unit Lock Lever.

With the Unit Lock Lever in Register or Read Row 2, the Drawer will open when Row 1 Differential Segment is stopped in either the Zero or 2nd position.

With the Unit Lock Lever in any other Read or Reset position, the 2 and 11 Segment Stop will be carried down stopping the Row 1 Differential Segment in the Zero position to open the Cash Drawer.

ROW 10, UNIT LOCK LEVER LOCKOUT
DRAWER CONTROL
(C-52)


LOCKING CAM ARM 51A3787
C-N 2000 TOTAL LEVER LOCK ARM SPRING
ITEM LOCKOUT DETENT 51A13125
UNIT LOCK LEVER SEGMENT 51B32575
LOCKING ARM LINK 51A628
DRAWER CONTROL ARM LINK 51A19673
LEVER LOCKING ARM 51A5179
CONTROL ARM SPRING 51A3084
LOCK LINE CONTROL ARM 51A616
KEY LOCK LINE
CLUTCH RELEASE OPER. ARM 51A33994
DRAWER RELEASE CAM ARM 51A2590
DRAWER RELEASE YOKE 51A1568
DRAWER RELEASE ARM 51A1568
DRAWER RELEASE CAM 51A3689
PTR. CLUTCH PAWL SPRING 31A15105
DRAWER RELEASE LINK 51A2365
DRAWER CATCH SPRING HOOK #1 A-99702 (C-1500)

Change Balance Due Operation

On a Change Balance-Due operation, the Row 1 Differential Segment is positioned by 1-1/8 T. O. H. The Unit Lock Lever Segment 51B32575 is controlled from Row 1 and will be stopped in the 2nd position.

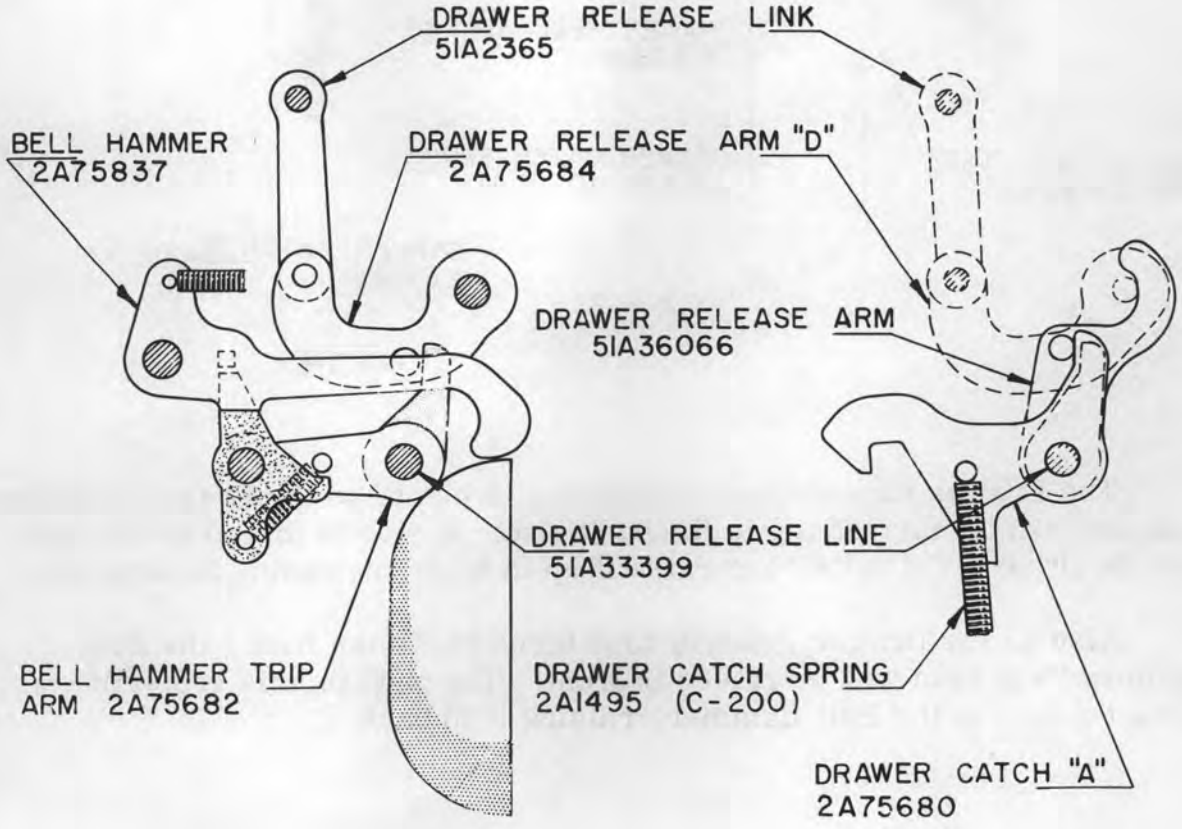
The high part of the raceway in the Unit Lock Lever Segment will cam the Locking Cam Arm 51A3787 down in back.

As the Locking Cam Arm moves down, spring tension will pull the Drawer Control Arm and Drawer Release Yoke down also.

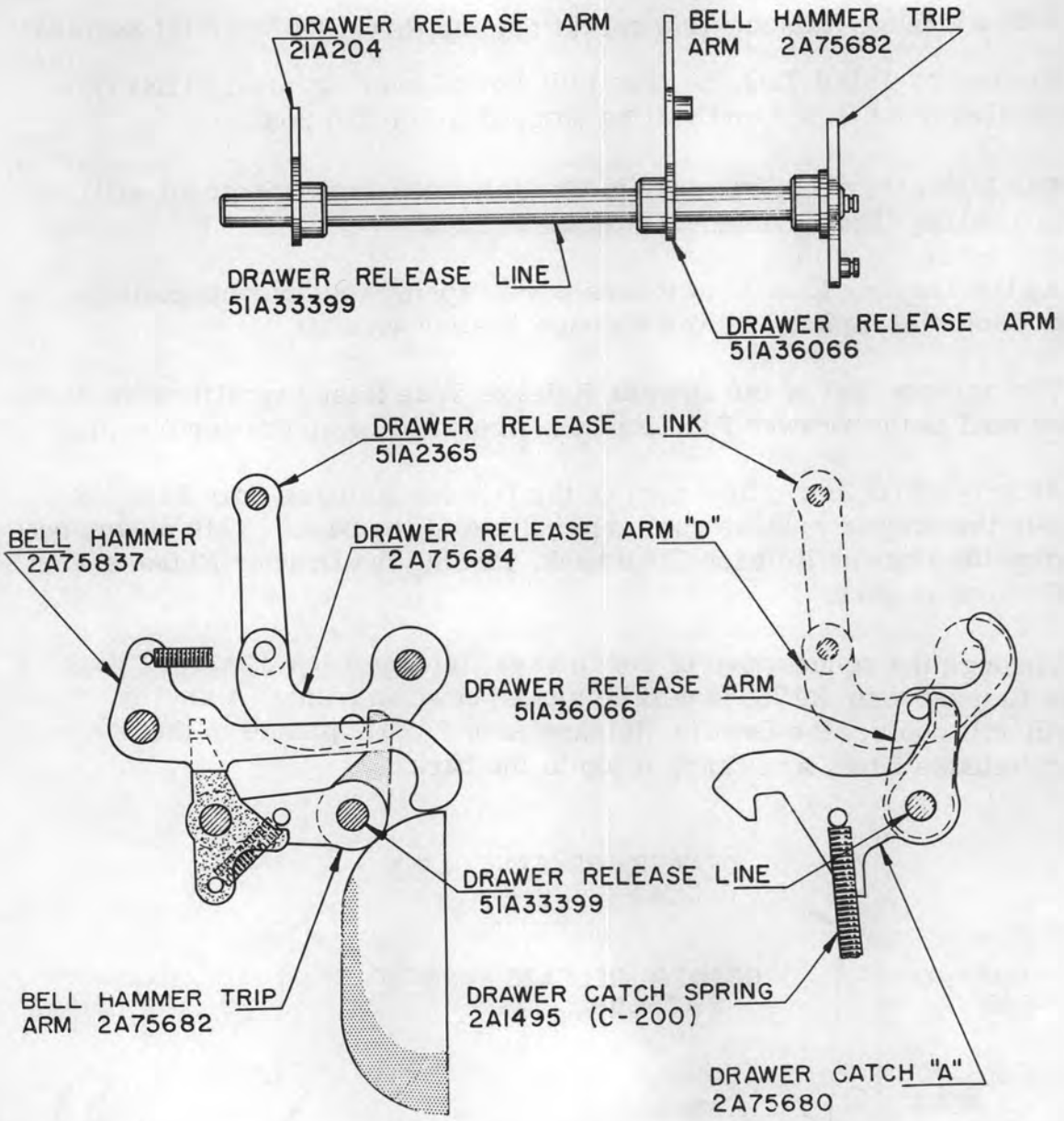
The narrow part of the Drawer Release Yoke Raceway will move down over the stud in the Drawer Release Cam Arm, abling up drawer opening.

At 1-1/2 T. O. H., a high part of the Drawer Release Cam 51A3689 will move the drawer release cam arm bottom to the back. This movement will carry the Drawer Release Yoke back, forcing the Drawer Release Arm 51A1568 down in back.

Through the connections of the Drawer Release Link 51A2365, the Drawer Release Arm 2A75684 will be moved down in front. A stud in this arm will contact the Drawer Release Arm 2A204, pinned to the Drawer Release Line, and carry it top to the back.



DRAWER CONTROL



The Drawer Release Arm 200A36066 is pinned to the Drawer Release Line and will be carried top to the back also. A stud in this arm will contact the Drawer Catch "A" and raise it up in front, releasing the drawer.

Also as the Drawer Release Line turns top to the back, the Bell Hammer Trip Arm will be raised in front. The pawl on this arm will contact a stud in the Bell Hammer, raising it in back.

As the Bell Hammer Trip Arm continues to move back, the pawl will ride off the Bell Hammer Stud and spring tension will pull the Bell Hammer down in back ringing the bell.

When any operation other than a Change Balance Due or Change Total is made, (Unit Lock Lever in Register or Read Row 2) the Unit Lock Lever Segment 51B32575 will hold the Drawer Control Arm Link and Drawer Release Yoke up, disabling drawer opening.

Read-Reset

When the Unit Lock Lever is moved to the Reset Row 2 positions, the Control Line will be turned top to the front.

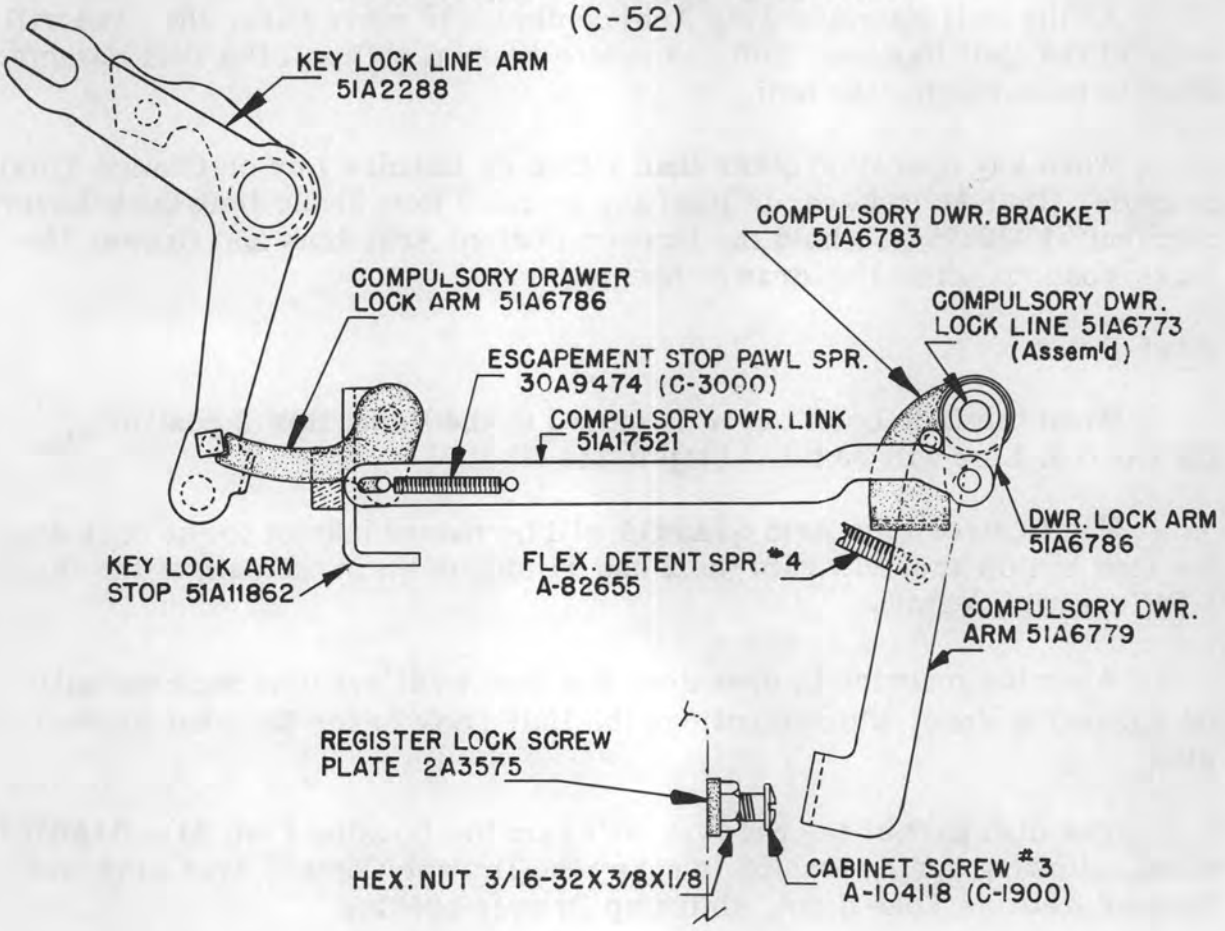
The Control Line Arm 51A9414 will be moved bottom to the back and the stud in this arm will cam the 2 and 11 stop down in the path of the Row 1 Differential Segment.

When the machine is operated, the Row 1 Differential Segment will be stopped at zero, which positions the Unit Lock Lever Segment to zero also.

The high part of the raceway will cam the Locking Cam Arm 51A3787 down, allowing spring tension to carry the Drawer Control Arm Link and Drawer Release Yoke down, abling up Drawer opening.

With the Unit Lock Lever in Read Group, the Control Line Arm 51A9414 is moved bottom to the front, again camming the 2 and 11 segment stip down in the path of the Differential Segment. The drawer will be opened on this operation the same as in Reset Row 2 positions.

COMPULSORY DRAWER MECHANISM
(C-52)



Compulsory Drawer Mechanism

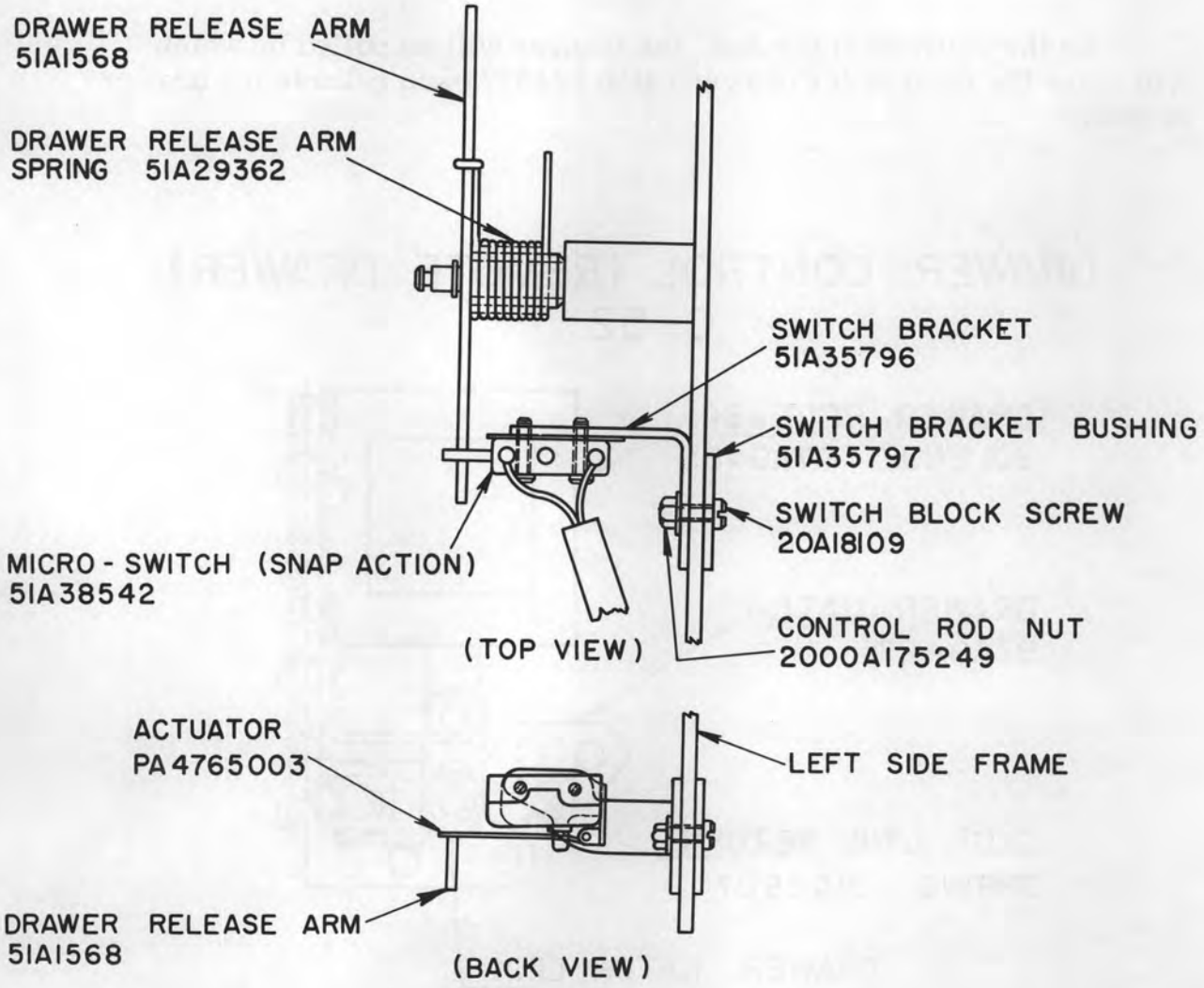
The Compulsory Drawer Mechanism prevents operating the Register with the Cash Drawer open. When the Cash Drawer opens, the screw located in the back of the drawer moves away from the Compulsory Drawer Arm.

At 1-3/4 T. O. H., as the Key Lock Line restores, the Key Lock Line Arm will be carried bottom to the front out of the path of the Compulsory Drawer Lock Arm 51A6786.

Spring tension will move the Compulsory Drawer Lock Arm up in the path of the stud in the Key Lock Arm, preventing the Key Lock Line tripping.

If the drawer is closed while the machine is partially tripped, the Compulsory Drawer Link will be carried back, flexing the Escapement Stop Pawl Spring 30A9474. It will then be necessary to restore the Key Lock Line before the machine can be tripped.

DRAWER CONTROL (SINGLE-REMOTE)
C-52



Single Remote Drawer

Drawer selection of the Remote Drawer remains the same as for the attached drawer. The drawer is opened by the Drawer Release Solenoid located inside the Drawer Base and energized from a Micro Switch located inside the left Side Frame.

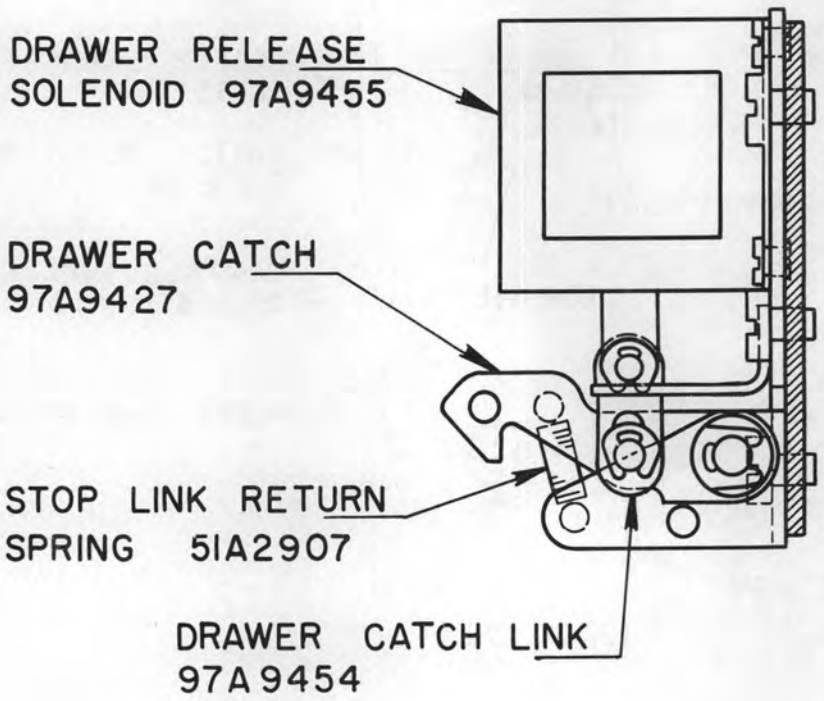
With the drawer selected to open, the Drawer Release Yoke is down in front in an abled position.

AT 1-1/2 T. O. H., the Drawer Release Cam Arm is carried botton to the back which will move the Drawer Release Yoke back and turn the Drawer Release Arm top to the back.

The back of the Drawer Release Arm will move down releasing the Micro Switch Actuator. This will open the "A" side of the switch and close the "B" side to energize the Drawer Release Solenoid in the Drawer Base.

As the Solenoid energizes, the plunger will be pulled up which will raise the front of the drawer catch 97A9427 and release the drawer to open.

DRAWER CONTROL (REMOTE DRAWER)
C-52

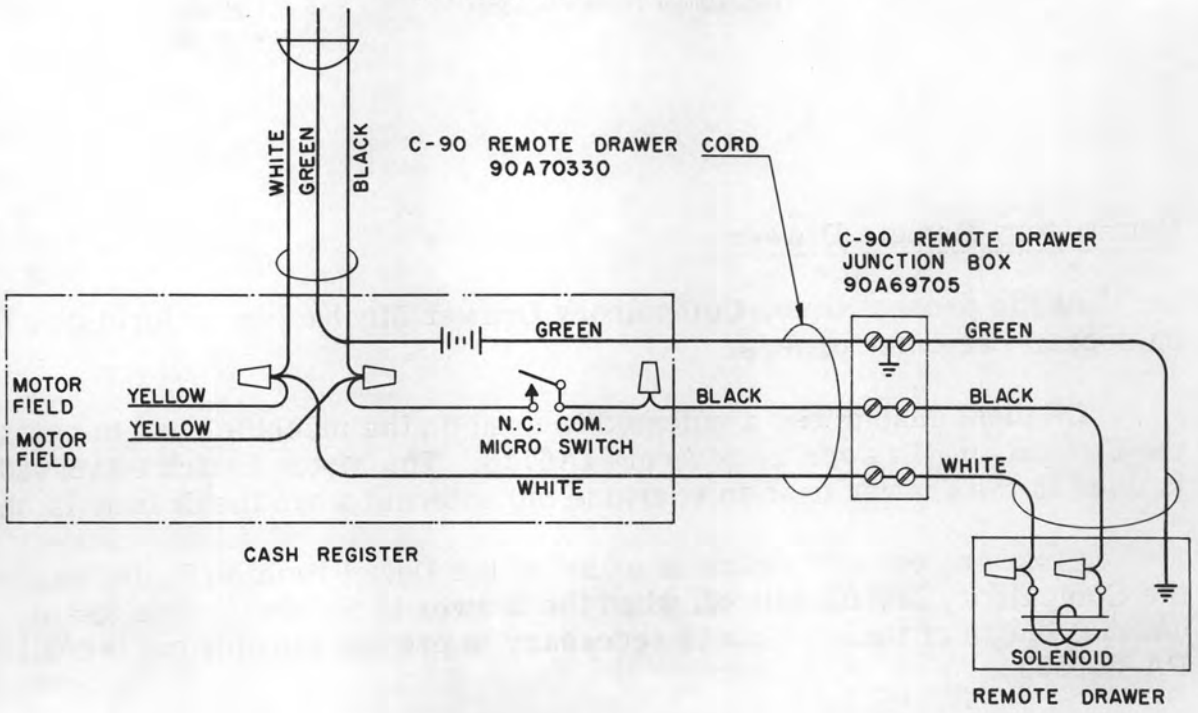


At 1-3/4 T. O. H., the Drawer Release Cam Arm is moved bottom to the front and the Drawer Release Arm is raised in back.

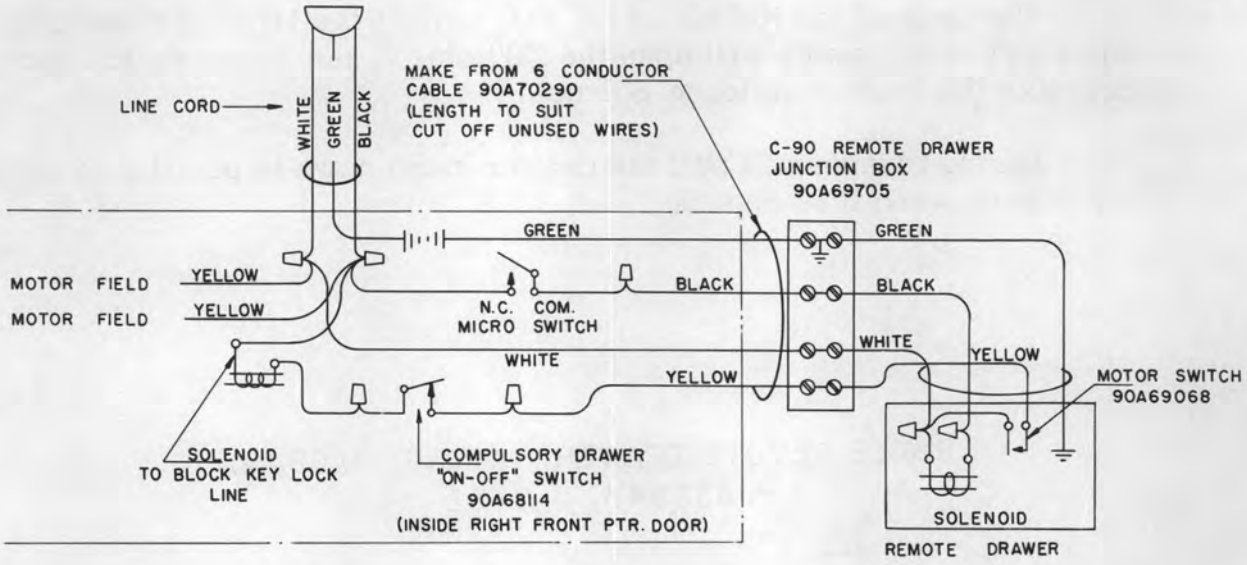
The back of the Release Arm will contact the Micro Switch Actuator and carry it up, which will open the "B" side of the Micro Switch and de-energize the Drawer Release Solenoid.

Spring tension will pull the drawer catch down in position to retain the drawer when it is closed.

SINGLE REMOTE DRAWER (WIRING DIAGRAM)
51A38543 C-52



WIRING DIAGRAM (SINGLE REMOTE COMPULSORY DRAWER)
51A32618 C-52



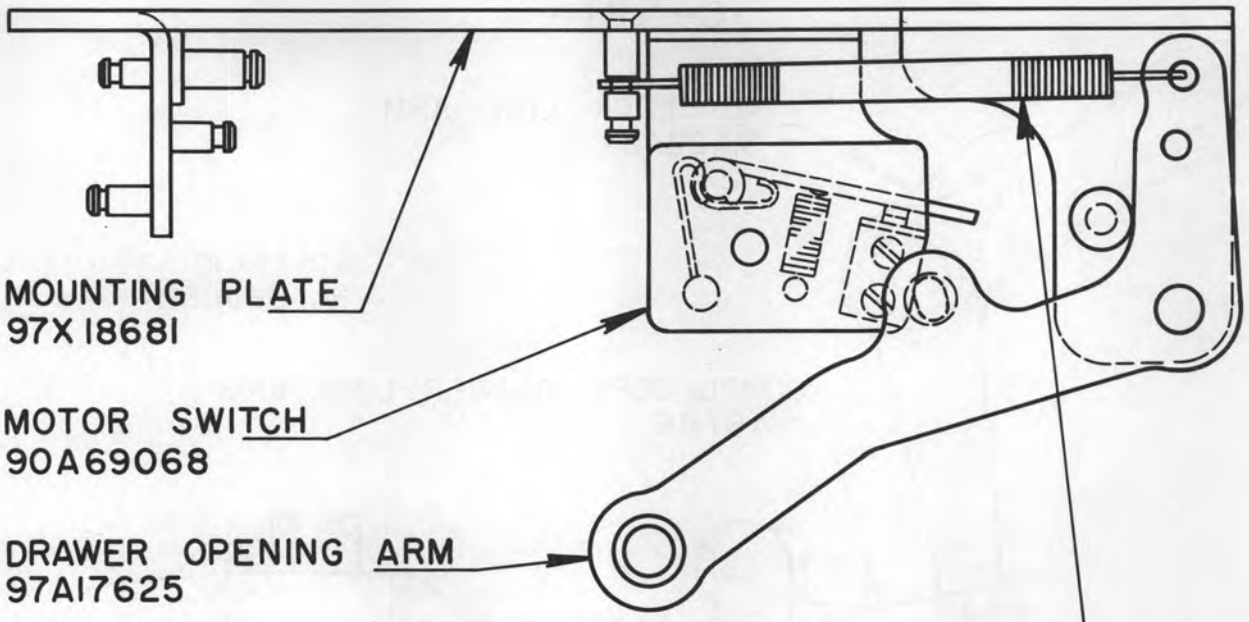
Compulsory Remote Drawer

At the present time, Compulsory Drawer Mechanism is furnished only on special customer orders.

On these machines, a solenoid is used on the machine base to actuate the Compulsory Drawer Lock Arm 51A6786. The Motor Switch 90A69068 is used in the drawer base to energize the solenoid when the drawer is open.

Also, an "on-off" switch is added to the Detail Printer Plate, to turn the Compulsory Mechanism off when the drawer is to be left open for an unusual length of time. This is necessary to prevent burning out the solenoid PA-5065052.

COMPULSORY MECHANISM (REMOTE DRAWER)
C-52

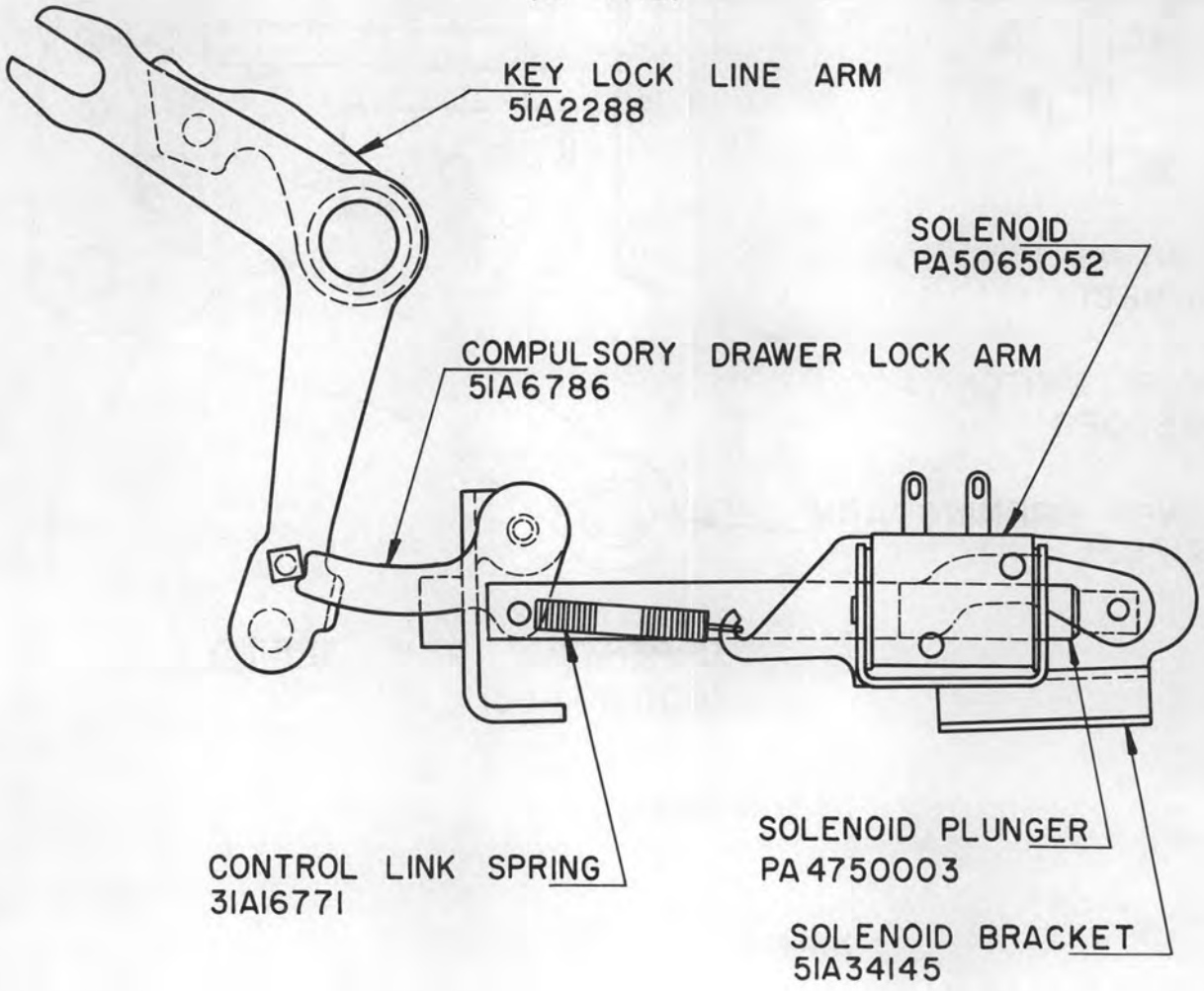


(TOP VIEW)

As the cash drawer opens, the Drawer Opening Arm 97A17625 is moved to the front. This carries the switch control stud to the front and closes the motor switch 90A69068 which completes the circuit and energizes solenoid PA-5065052 in the machine.

As the plunger PA-4750003 moves into the solenoid, the Compulsory Drawer Link 51A35427 will be carried to the front and raise the Compulsory Drawer Lock Arm up against the stud in the Key Lock Line Arm.

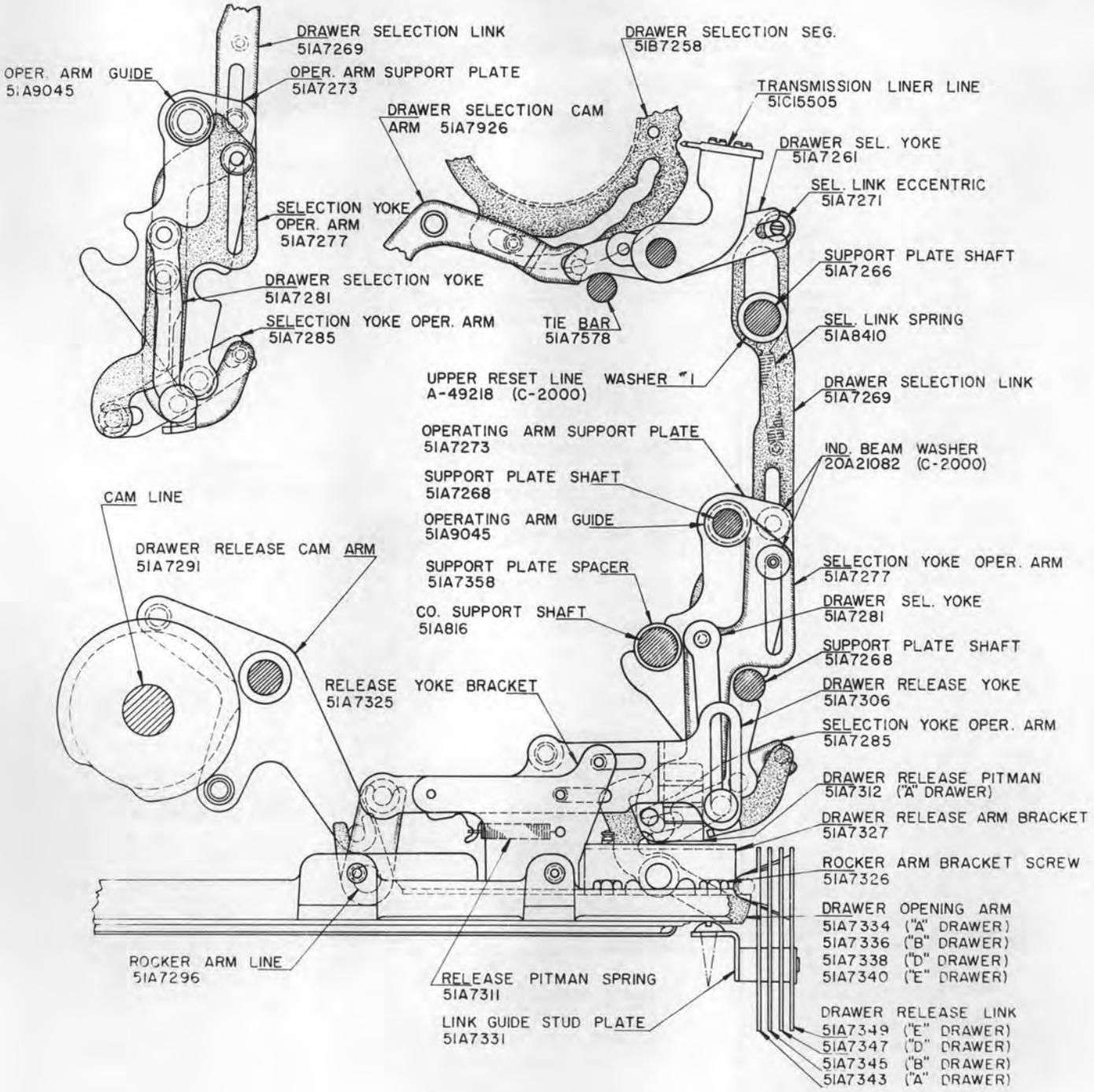
COMPULSORY DRAWER MECHANISM
(REMOTE DRAWER)
(C-52)



When the Key Lock Line restores, the Key Lock Line Arm is moved bottom to the front allowing the Compulsory Drawer Lock Arm to be carried up in the path of the square stud.

When the drawer is closed, the motor switch 90A69068 will be opened which De-energizes solenoid PA-5065052. Spring tension will now restore the Compulsory Drawer Link 51A35427 and Compulsory Drawer Link Arm. The machine can now be tripped for the next operation.

MULTIPLE DRAWER-TWO TIER, FOUR DRAWER
CONTROLLED FROM ROW ONE
C-52-13-13-4 (CCG) T.C.-1PK-42

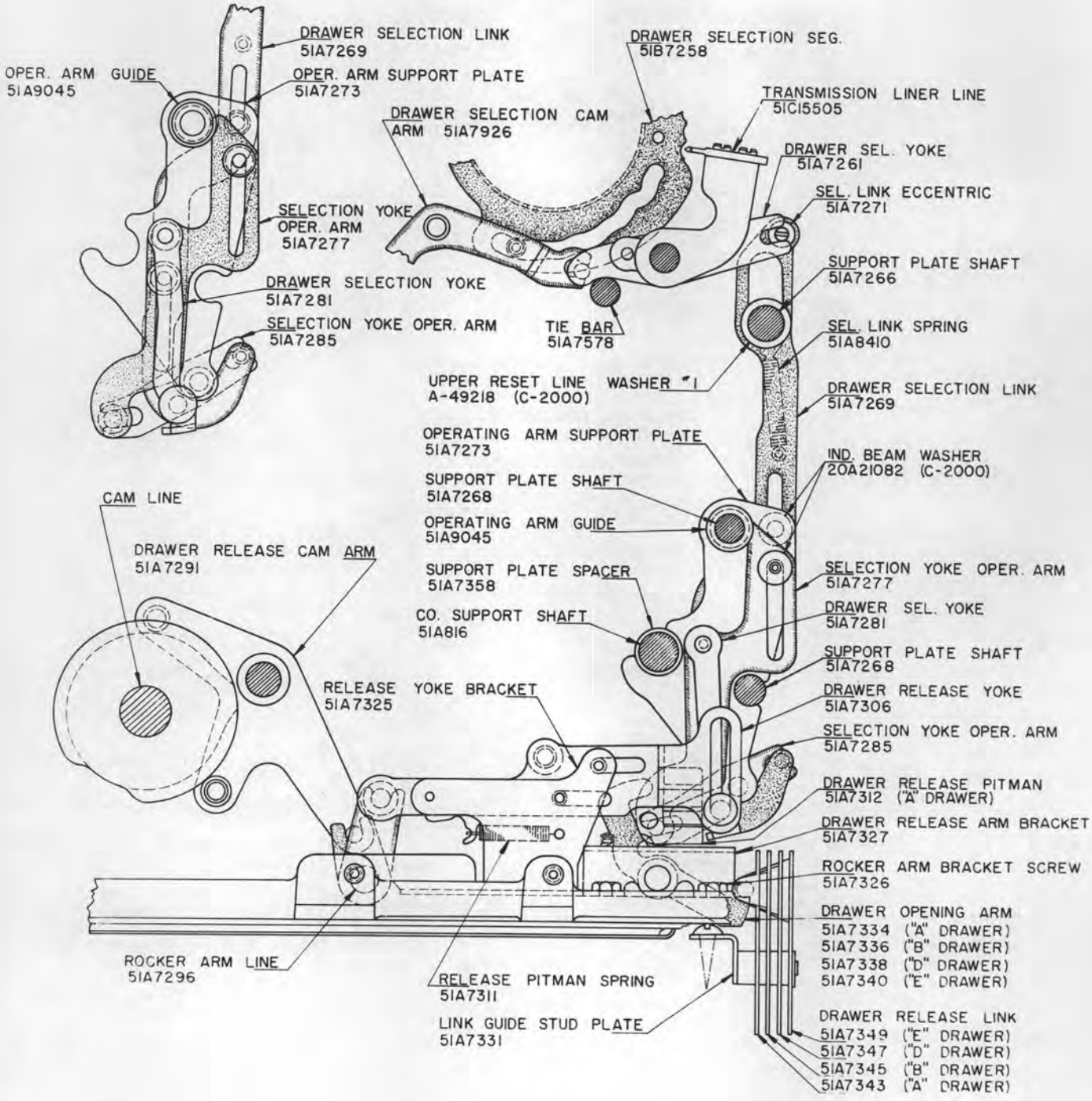

DRAWER SELECTION LINK 51A7269
DRAWER SELECTION SEG. 51B7258
OPER. ARM GUIDE 51A9045
OPER. ARM SUPPORT PLATE 51A7273
TRANSMISSION LINER LINE 51C15505
DRAWER SELECTION CAM ARM 51A7926
DRAWER SEL. YOKE 51A7261
SEL. LINK ECCENTRIC 51A7271
SELECTION YOKE OPER. ARM 51A7277
SUPPORT PLATE SHAFT 51A7266
DRAWER SELECTION YOKE 51A7281
SEL. LINK SPRING 51A8410
SELECTION YOKE OPER. ARM 51A7285
TIE BAR 51A7578
UPPER RESET LINE WASHER "I" A-49218 (C-2000)
DRAWER SELECTION LINK 51A7269
OPERATING ARM SUPPORT PLATE 51A7273
IND. BEAM WASHER 20A21082 (C-2000)
SUPPORT PLATE SHAFT 51A7268
CAM LINE
OPERATING ARM GUIDE 51A9045
DRAWER RELEASE CAM ARM 51A7291
SUPPORT PLATE SPACER 51A7358
SELECTION YOKE OPER. ARM 51A7277
CO. SUPPORT SHAFT 51A816
DRAWER SEL. YOKE 51A7281
SUPPORT PLATE SHAFT 51A7268
RELEASE YOKE BRACKET 51A7325
DRAWER RELEASE YOKE 51A7306
SELECTION YOKE OPER. ARM 51A7285
DRAWER RELEASE PITMAN 51A7312 ("A" DRAWER)
DRAWER RELEASE ARM BRACKET 51A7327
ROCKER ARM BRACKET SCREW 51A7326
DRAWER OPENING ARM
51A7334 ("A" DRAWER)
51A7336 ("B" DRAWER)
51A7338 ("D" DRAWER)
51A7340 ("E" DRAWER)
ROCKER ARM LINE 51A7296
RELEASE PITMAN SPRING 51A7311
LINK GUIDE STUD PLATE 51A7331
DRAWER RELEASE LINK
51A7349 ("E" DRAWER)
51A7347 ("D" DRAWER)
51A7345 ("B" DRAWER)
51A7343 ("A" DRAWER)

MULTIPLE DRAWER CONTROL

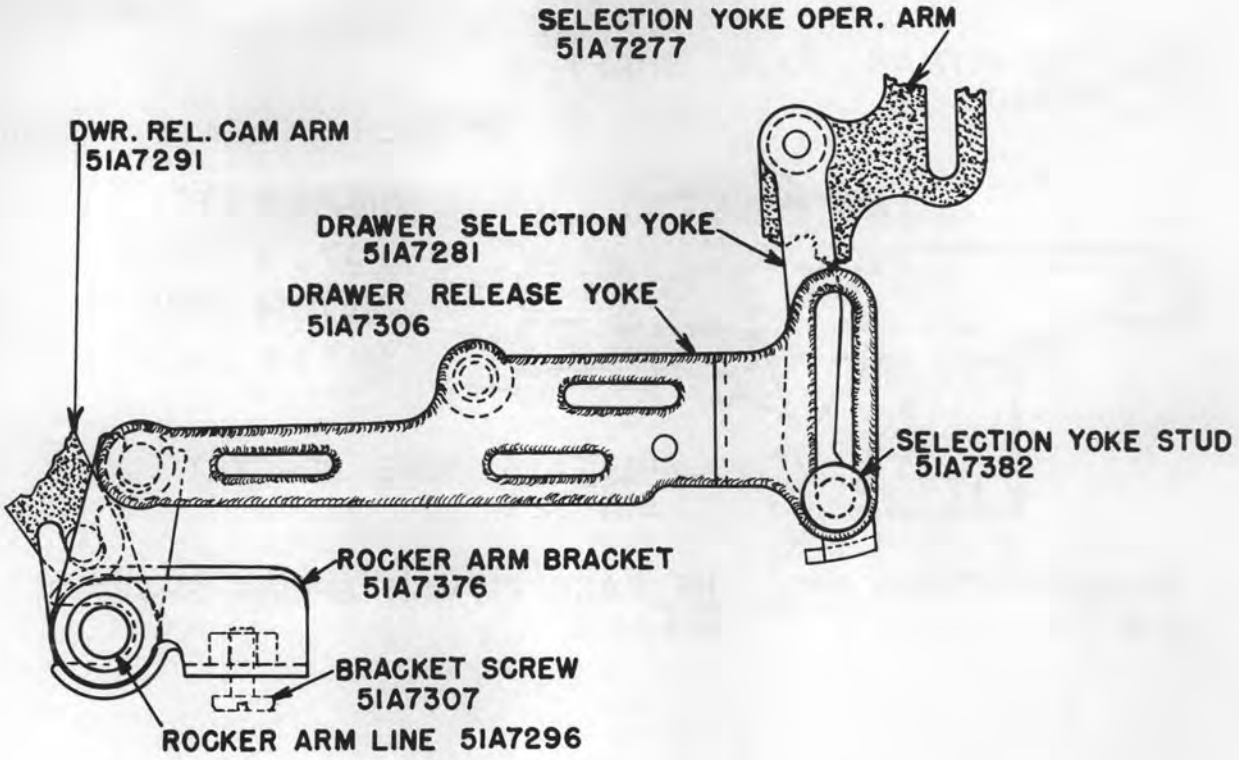
C-52-13-13-4 (CCG) TC-1PK-42

The Drawer Selection Segment 51B7258 determines which drawer will open and is controlled from Row 1 and the Unit Lock Lever.

MULTIPLE DRAWER-TWO TIER, FOUR DRAWER
CONTROLLED FROM ROW ONE
C-52-13-13-4 (CCG) T.C.-IPK-42


DRAWER SELECTION LINK 51A7269
OPER. ARM GUIDE 51A9045
OPER. ARM SUPPORT PLATE 51A7273
DRAWER SELECTION SEG. 51B7258
TRANSMISSION LINER LINE 51C15505
DRAWER SELECTION CAM ARM 51A7926
DRAWER SEL. YOKE 51A7261
SEL. LINK ECCENTRIC 51A7271
SELECTION YOKE OPER. ARM 51A7277
SUPPORT PLATE SHAFT 51A7266
DRAWER SELECTION YOKE 51A7281
SELECTION YOKE OPER. ARM 51A7285
TIE BAR 51A7578
SEL. LINK SPRING 51A8410
UPPER RESET LINE WASHER "I" A-49218 (C-2000)
DRAWER SELECTION LINK 51A7269
OPERATING ARM SUPPORT PLATE 51A7273
IND. BEAM WASHER 20A21082 (C-2000)
SUPPORT PLATE SHAFT 51A7268
CAM LINE
OPERATING ARM GUIDE 51A9045
DRAWER RELEASE CAM ARM 51A7291
SUPPORT PLATE SPACER 51A7358
SELECTION YOKE OPER. ARM 51A7277
CO. SUPPORT SHAFT 51A816
DRAWER SEL. YOKE 51A7281
SUPPORT PLATE SHAFT 51A7268
RELEASE YOKE BRACKET 51A7325
DRAWER RELEASE YOKE 51A7306
SELECTION YOKE OPER. ARM 51A7285
DRAWER RELEASE PITMAN 51A7312 ("A" DRAWER)
DRAWER RELEASE ARM BRACKET 51A7327
ROCKER ARM BRACKET SCREW 51A7326
DRAWER OPENING ARM
51A7334 ("A" DRAWER)
51A7336 ("B" DRAWER)
51A7338 ("D" DRAWER)
51A7340 ("E" DRAWER)
ROCKER ARM LINE 51A7296
RELEASE PITMAN SPRING 51A7311
LINK GUIDE STUD PLATE 51A7331
DRAWER RELEASE LINK
51A7349 ("E" DRAWER)
51A7347 ("D" DRAWER)
51A7345 ("B" DRAWER)
51A7343 ("A" DRAWER)

When the "A" key is used, Row 1 Differential Segment will be stopped in the 10th position. This positions the Indicator Segment and Drawer Selection Segment to the 10th position also. A high part of the raceway will cam the Drawer Selection Cam Arm 51A7926 down in back . The Drawer Selection Cam Arm yokes a stud in the left side of the Drawer Selection Yoke and will move the yoke down in front and up in back.



The right side of the Selection Yoke is assembled to an arm which yokes an Eccentric Stud in the Drawer Selection Link and will carry the link up.

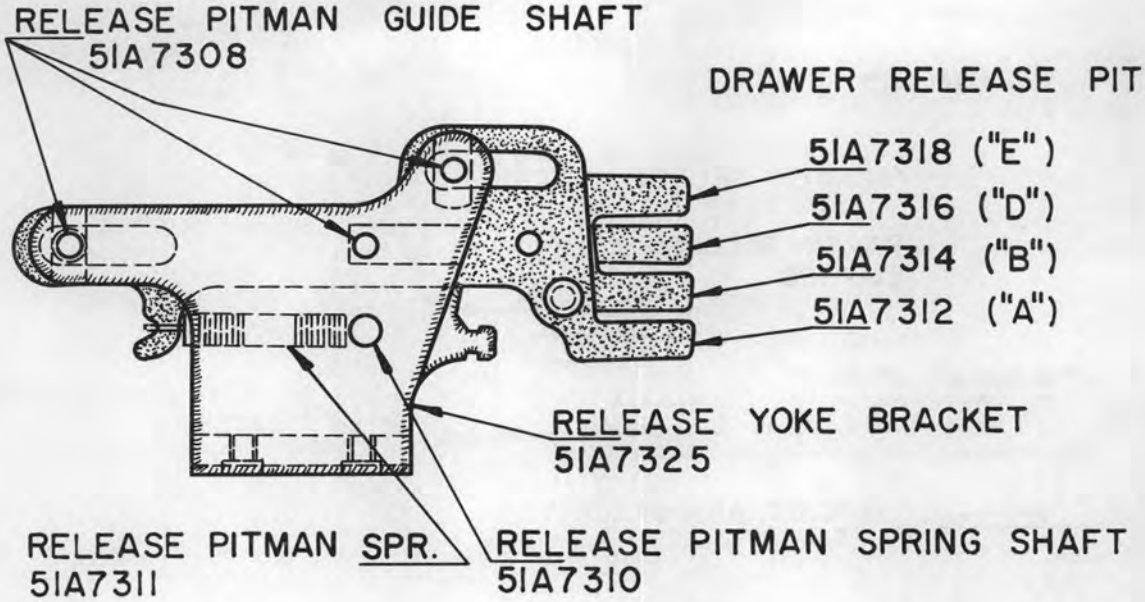
The stud in the bottom of the Drawer Selection Link is yoked by the Selection Yoke Operating Arm 51A7285 and will raise this arm up in back.

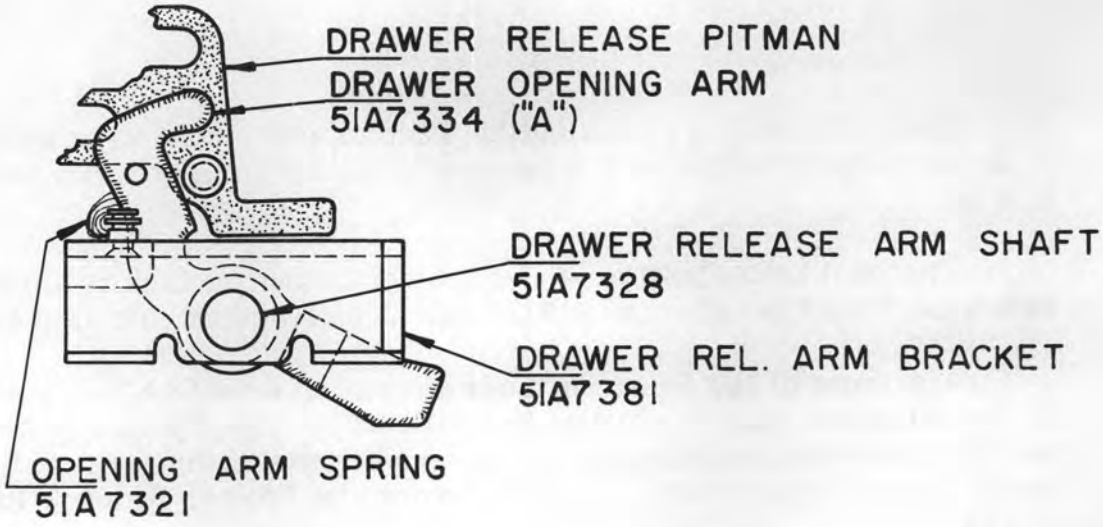
The front of the Selection Yoke Operating Arm 51A7285 yokes a stud in the Selection Yoke Operating Arm 51A7277. The Operating Arm 51A7277 will be carried down and through the connections of the long stud will lower the Drawer Release Yoke until it is behind the Drawer Release Pitman 51A7312.

At 1-1/2 T. O. H., the Drawer Relaese Cam Arm will be carried bottom to the front. Through the yoking connections of the two Rocker Arms pinned to the Rocker Arm Line, the Drawer Release Yoke 51A7306 will be carried to the front. The Drawer Release Yoke is connected to the Drawer Selection Yoke and will pull the Selection Yoke bottom to the front.

As the Selection Yoke moves, it will contact the Drawer Release Pitman, for "A" Drawer, and carry it to the front also.

A stud in the Release Pitman will contact the top of the Drawer Opening Arm 51A7334 ("A" drawer) and rock it top to the front and up in back.





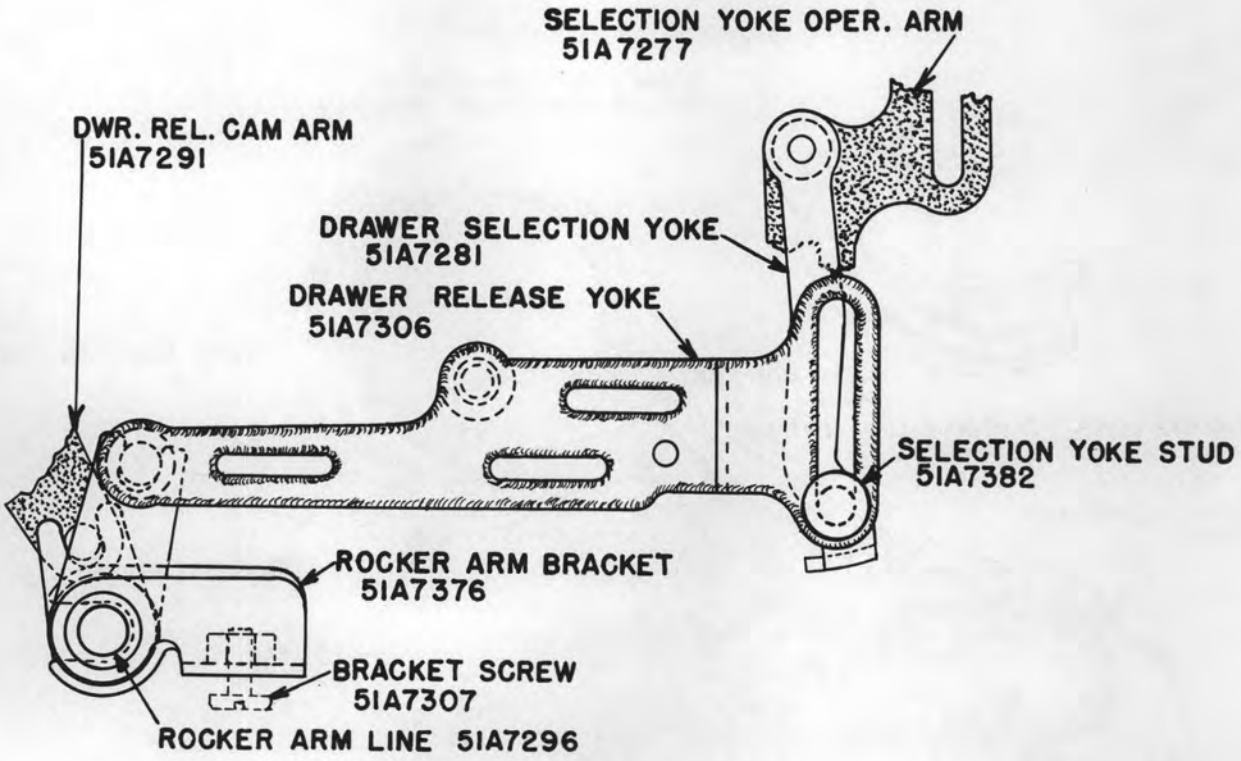
As the Drawer Opening Arm moves up in back, it will contact a stud in the Drawer Release Link 51A7343 ("A" drawer) and raise it, which releases the Drawer Catch to open the "A" drawer.

At 1-3/4 T. O. H., movement is reversed to the Drawer Release Cam Arm to restore the Drawer Release Yoke and Drawer Selection Yoke.

When this happens, spring tension will restore the Drawer Release Pitman, Drawer Opening Arm, Drawer Release Link and Drawer Catch, to retain the drawer when it is closed.

When Itemizing with Row 2 keys, the Row 1 Zero Stop will move in and stop Row 1 Differential Segment at Zero. The Drawer Selection Segment will be positioned to Zero also which will raise the Drawer Selection Yoke 51A2281 above the Drawer Release Pitman.

At 1-1/2 T. O. H., on this operation, the Drawer Selecting Yoke will receive an idle movement to the front, leaving the drawers closed.

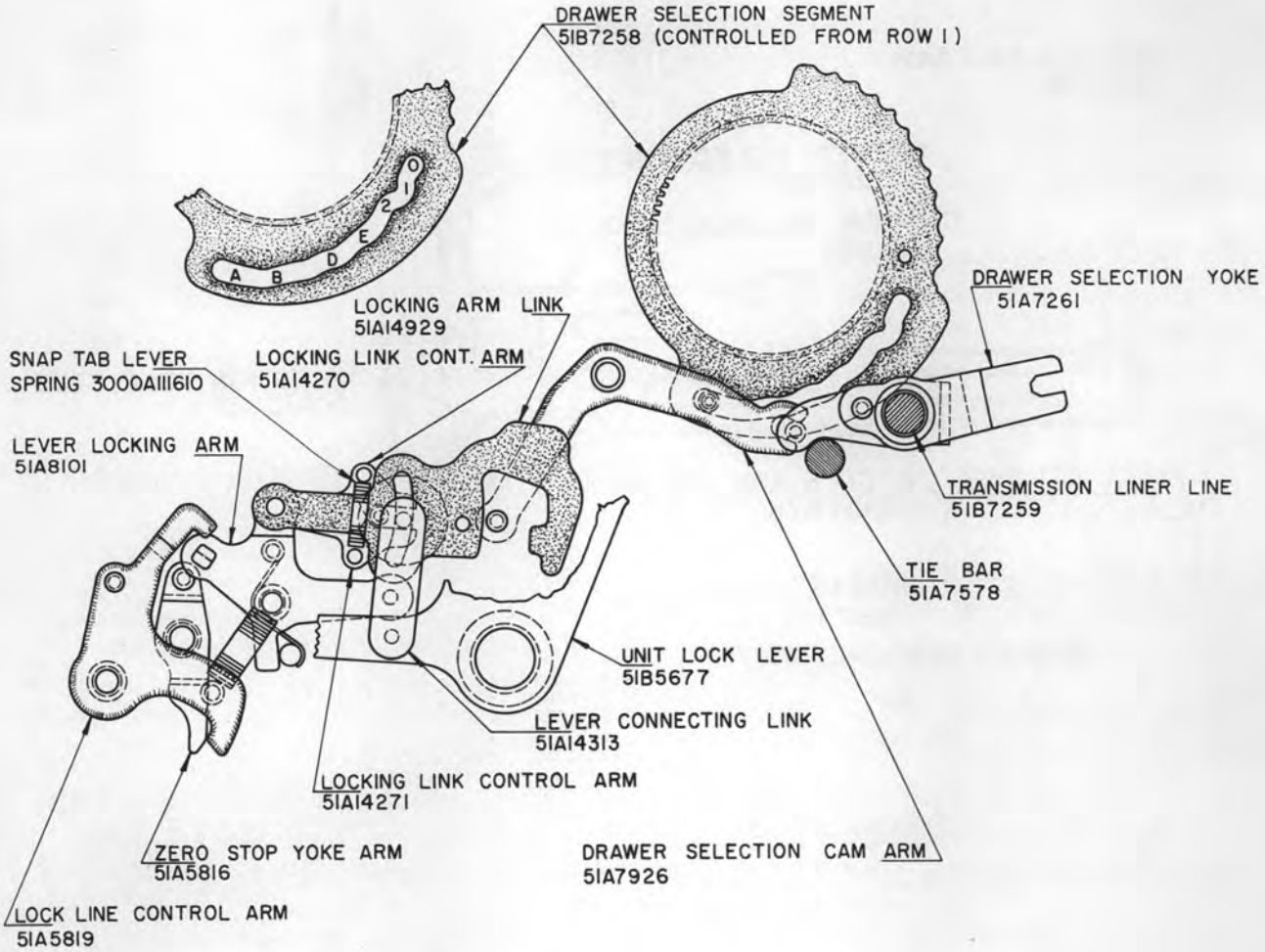


Read and Reset Row 2

When the Unit Lock Lever is moved to Read or Reset Row 2, the 2 and 11 Segment Stop is moved down in the path of the Row 1 Differential Segment.

As the machine is operated, Row 1 Differential Segment will be stopped in the 2nd position. This positions the Drawer Selection Segment to the 2nd position and raises the Drawer Selection Cam Arm up in back.

The Drawer Selection Yoke will be raised above the Drawer Release Pitmans disabling Drawer opening.



Locking Unit Lock Lever- Register Position

When Itemizing, the Unit Lock Lever will be locked after the first operation and remain locked until a Total operation is made.

When an Item Operation is made, Row 1 Differential Segment will be stopped in the Zero position, by the Zero Stop.

The raceway in the Drawer Selection Segment will cam the Drawer Selection Cam Arm bottom to the back. The stud in this arm will contact the high part of the Locking Arm Lind 51A14929 and carry it back, raising the Lever Locking Arm 51A8101 up in front.

The stud in the Lever Locking Arm will be positioned in back of the Lock Line Control Arm, preventing it moving back, hence locking the Unit Lock Lever.

When a Total Operation is made, the Drawer Selection Cam Arm will be cammed down in back. This will release the Locking Arm Link and spring tension will restore the Lever Locking Arm down in front, freeing up the Unit Lock Lever.

Disabling U. L. L. Lock-Read and Reset Row 2

When the Unit Lock Lever is moved to Read or Reset Row 2, the Lever Connecting Link 51A14313 is moved up. A stud at the top of this link is held by the two Locking Link Control Arms and will carry these two arms up which will raise the Locking Arm Link up in back.

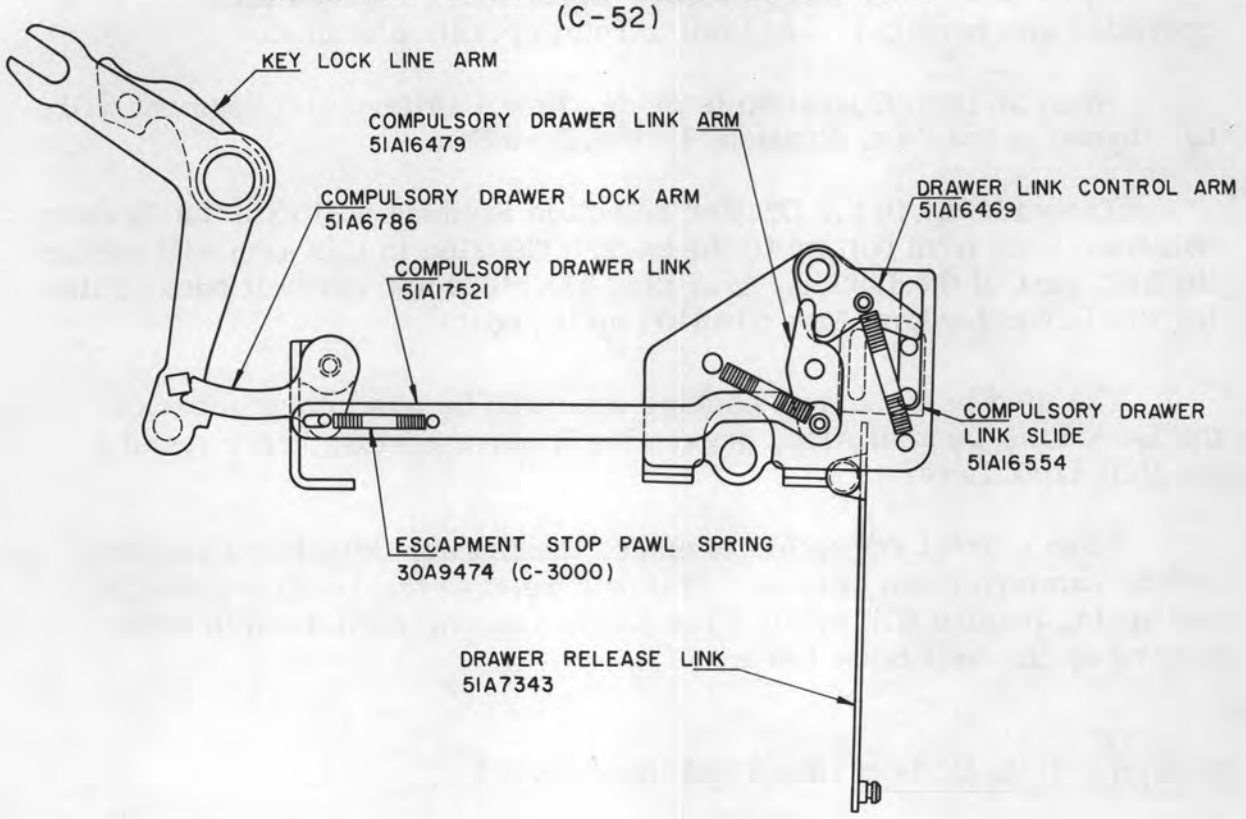
As the machine is operated, the Drawer Selection Cam Arm will again be moved bottom to the back, placing the stud under the high part of the Locking Arm Link.

When the Unit Lock Lever is moved back to the register position, the Lever Connecting Link will be pulled down. Since the Locking Arm Link is held up in back, by the Drawer Selection Cam Arm, the lower Locking Link Control Arm will be forced down, flexing the C-3000 Snap Tab Lever Spring A111610.

On the first Item Operation, in Register, the Drawer Selection Cam Arm will be moved bottom to the front by the #1 position of the Drawer Selection Segment. Spring tension will now restore the Locking Arm Link.

When the Unit Lock Lever is moved to Read and Reset Row 1, the 2 and 11 Segment stop remains up leaving the Row 1 Differential Segment free to travel to the key pressed and select the drawer to open.

COMPULSORY MECHANISM (MULTIPLE DRAWER)
(C-52)



Compulsory Drawer Mechanism

The Compulsory Drawer Mechanism, on the multiple drawer machines, will make the machine inoperative when any one of the drawers is open.

As the drawer is opened, the Drawer Release Link is raised and will contact the Compulsory Drawer Link Slide, raising it. A stud in the slide will raise the Drawer Link Control Arm 51A16469 up in back, moving the roll, on this arm, away from the Compulsory Drawer Link Arm.

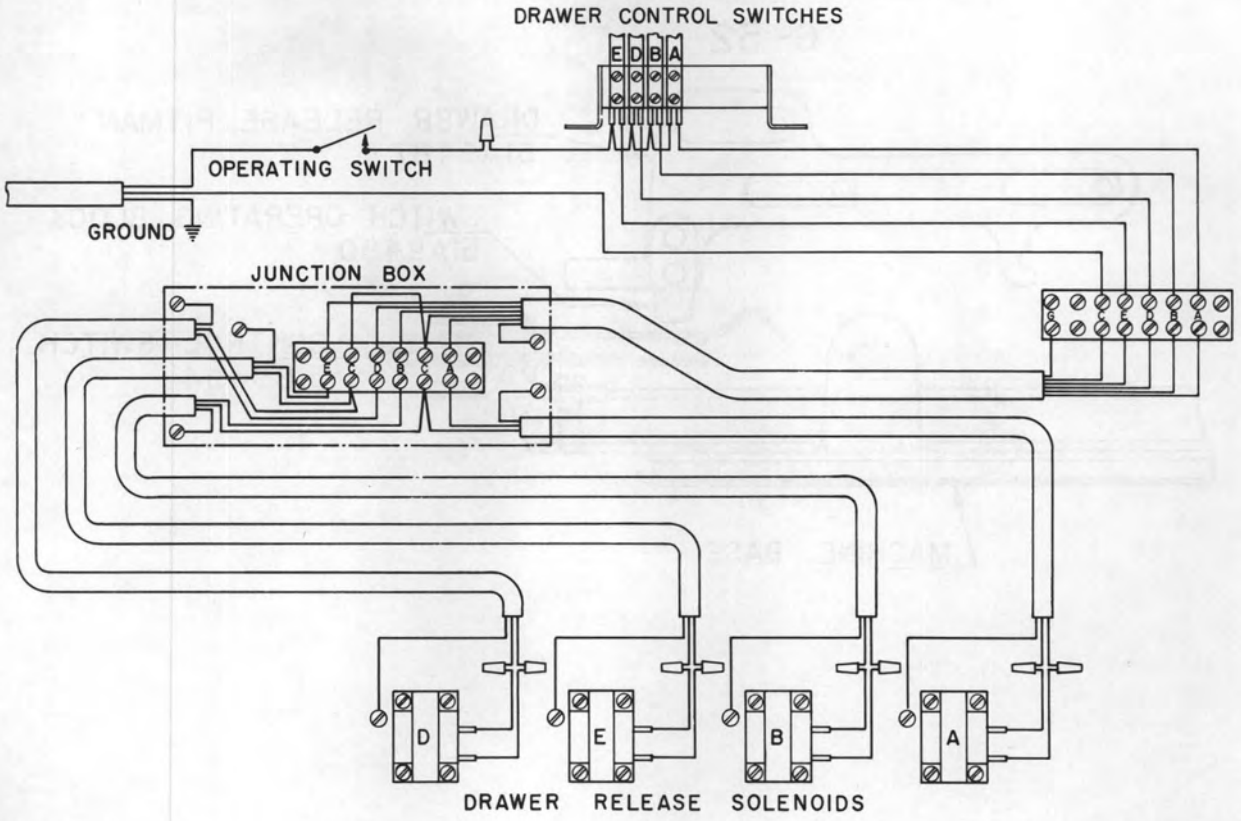
Spring tension on the Compulsory Drawer Link Arm will now pull it and the Compulsory Drawer Link, to the front.

This will raise the Compulsory Drawer Lock Arm to disable the Machine with the drawer open.

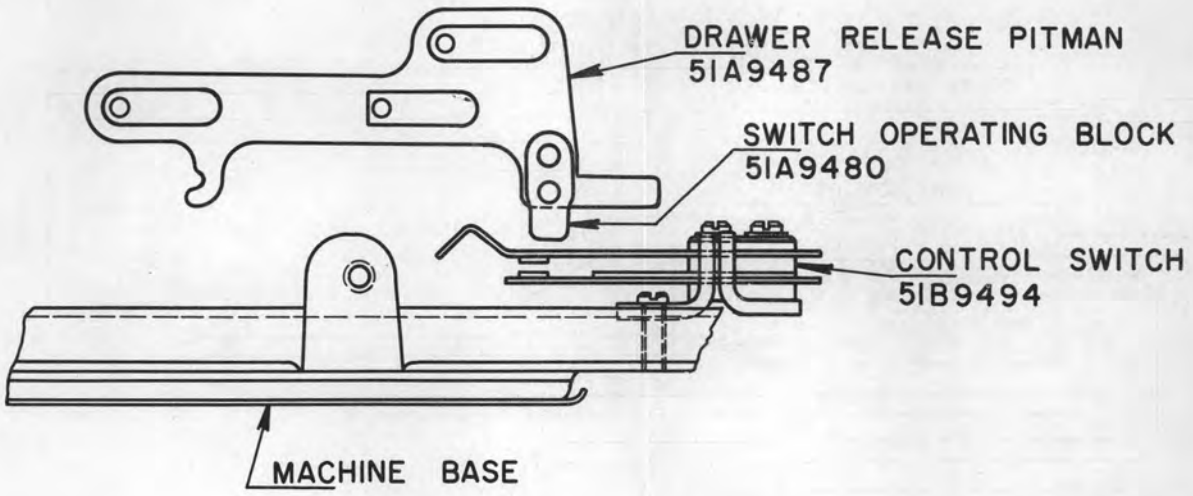
CASH DRAWER CONTROL WIRING DIAGRAM (REMOTE CONTROL)

90B69733

(C-52)



REMOTE DRAWER CONTROL
(MULTIPLE DRAWERS)
C-52



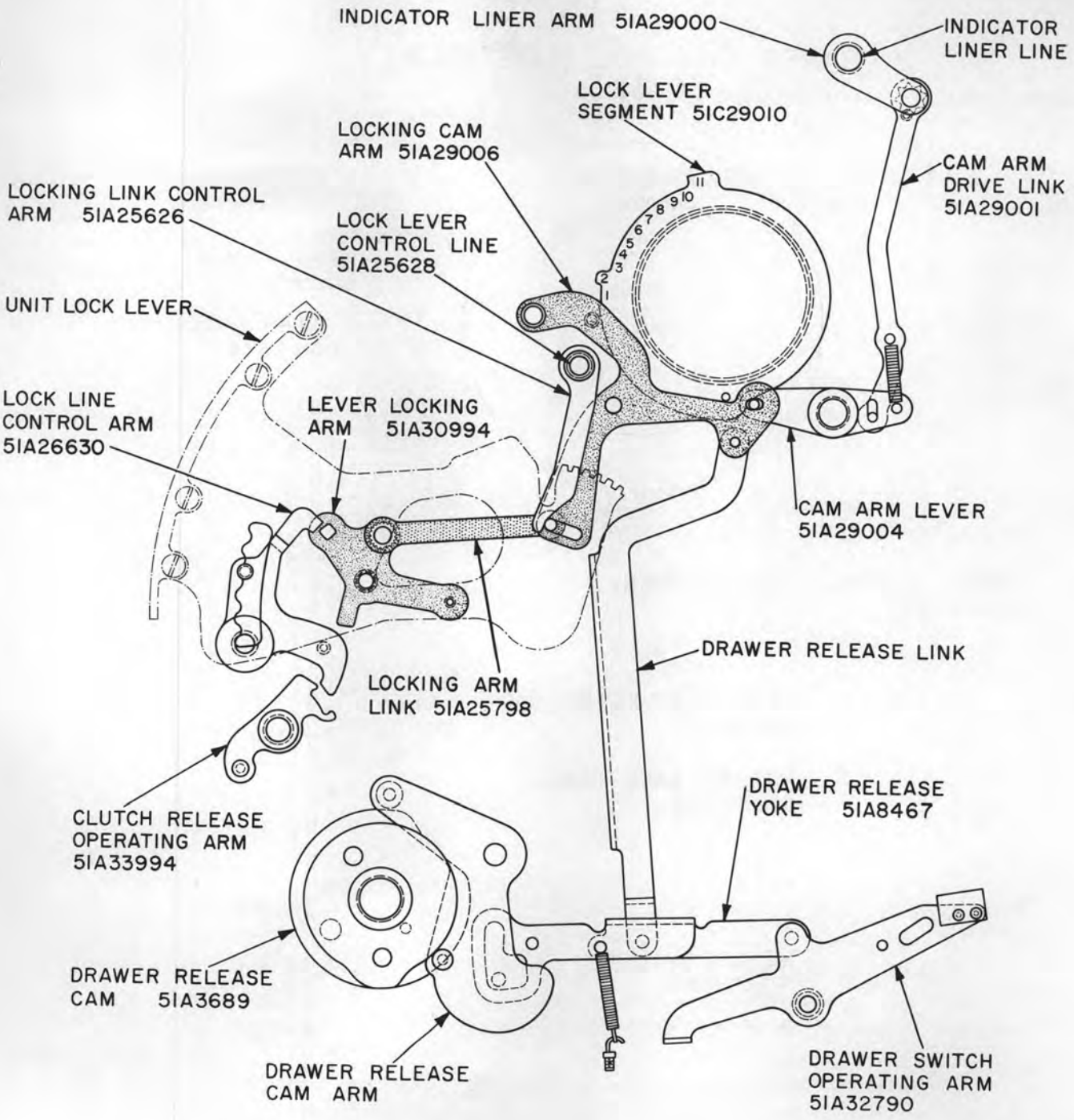
Multiple Drawers - Remote

Remote Drawers are selected in the same manner as the attached drawers, but are opened by a solenoid located behind each drawer.

When the Drawer Release Pitman for the selected drawer is carried to the front, a fiber block attached to the Pitman will contact the formed portion of the upper switch blade and close the Control Switch 51B9494.

The Drawer Release Solenoid, for the selected drawer, will now be energized and raise the Drawer Catch allowing the drawer to open.

The Drawer Release Solenoid is de-energized when the Drawer Release Pitman restores and opens the Drawer Control Switch.

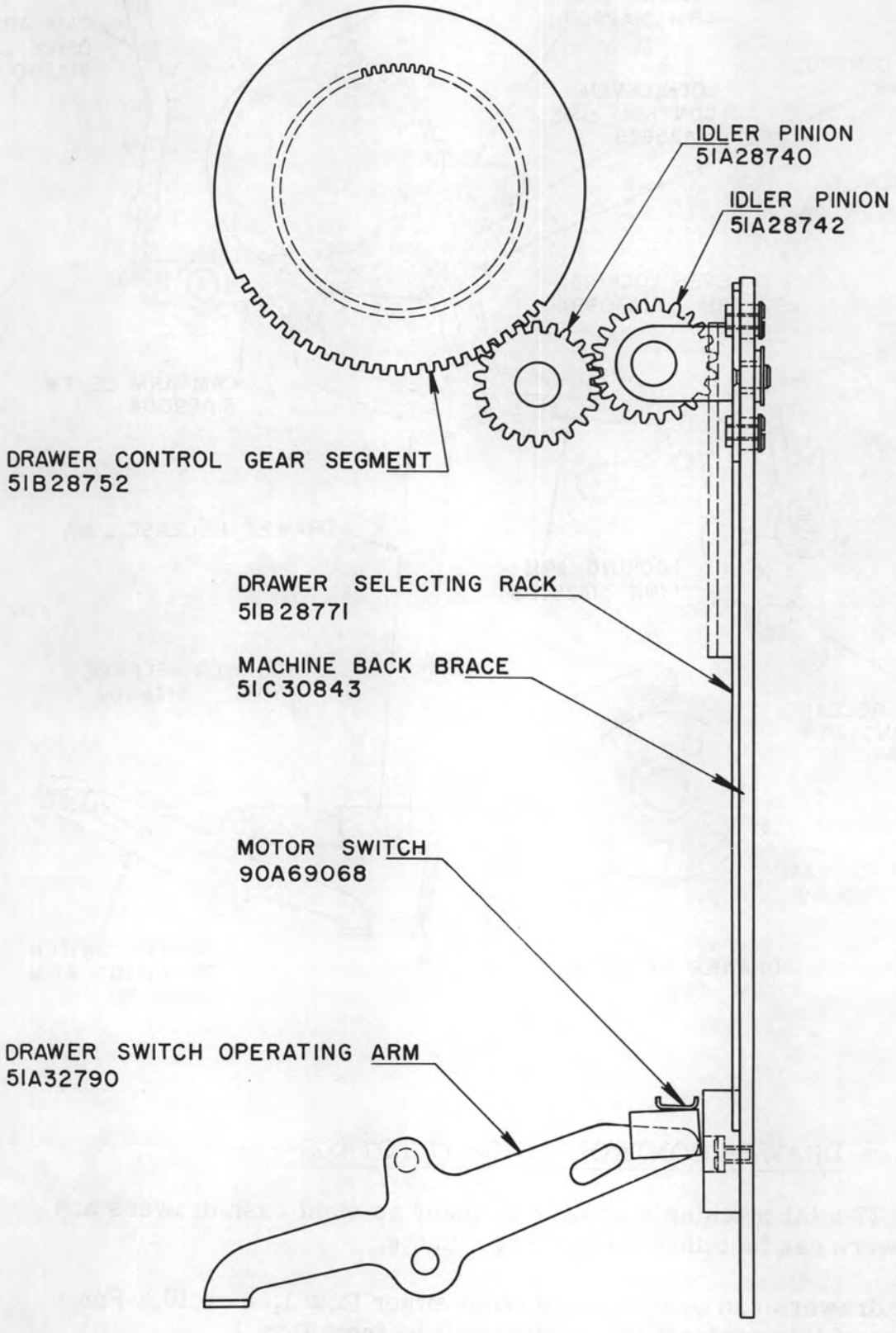

INDICATOR LINER ARM 51A29000
INDICATOR LINER LINE
LOCK LEVER SEGMENT 51C29010
LOCKING CAM ARM 51A29006
CAM ARM DRIVE LINK 51A29001
LOCKING LINK CONTROL ARM 51A25626
LOCK LEVER CONTROL LINE 51A25628
UNIT LOCK LEVER
LOCK LINE CONTROL ARM 51A26630
LEVER LOCKING ARM 51A30994
CAM ARM LEVER 51A29004
DRAWER RELEASE LINK
LOCKING ARM LINK 51A25798
CLUTCH RELEASE OPERATING ARM 51A33994
DRAWER RELEASE YOKE 51A8467
DRAWER RELEASE CAM 51A3689
DRAWER RELEASE CAM ARM
DRAWER SWITCH OPERATING ARM 51A32790

DRAWER CONTROL - C-52-17 TOTALS

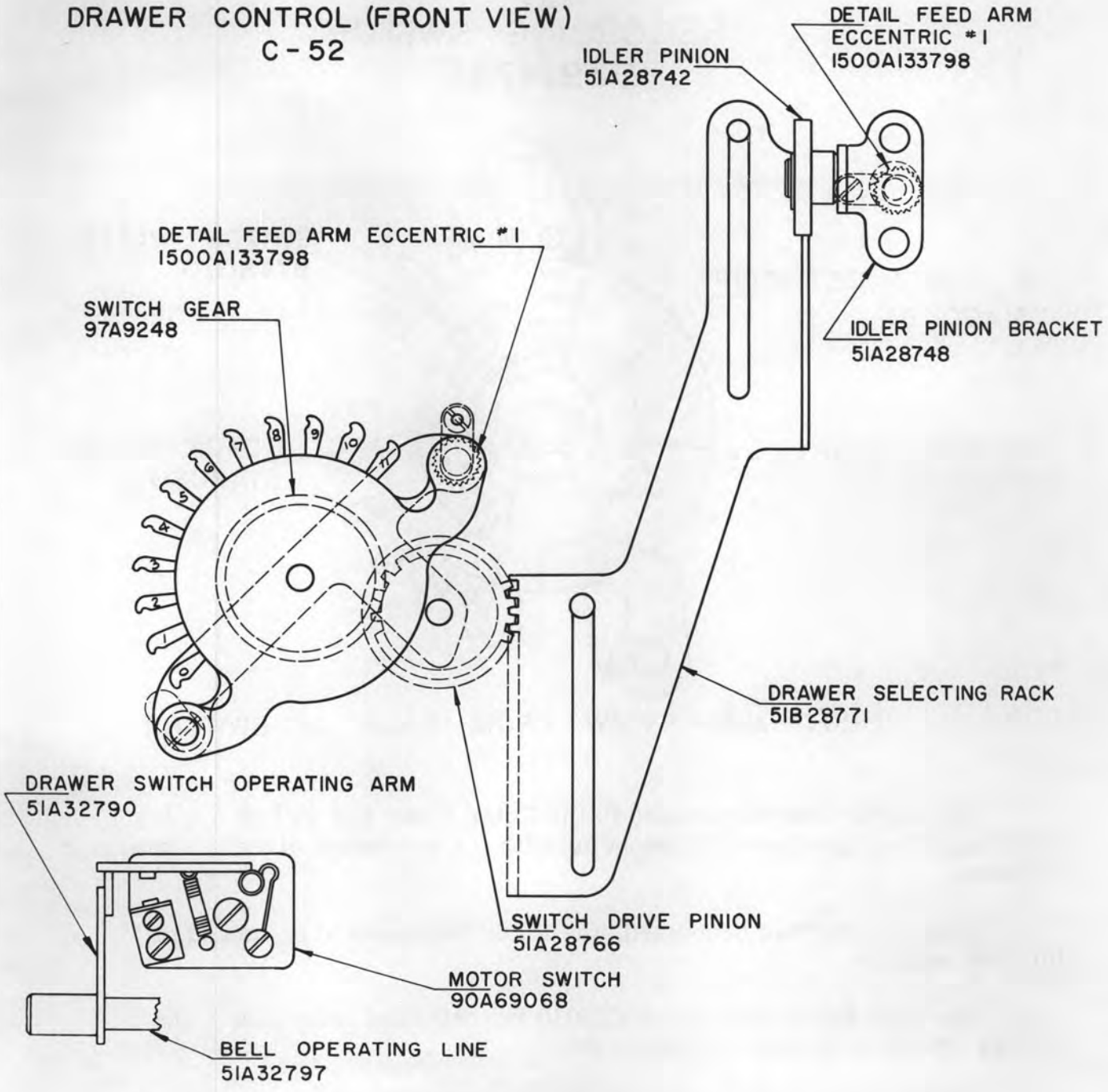
The 17 total machine may have as many as eight cash drawers and these drawers can be either attached or remote.

The drawers can be controlled from either Row 1, 2 or 10. For the purpose of this explanation, control will be from Row 1.

DRAWER CONTROL (SIDE VIEW)
C-52



DRAWER CONTROL (FRONT VIEW)
C-52


DETAIL FEED ARM ECCENTRIC #1 1500A133798
IDLER PINION 51A28742
DETAIL FEED ARM ECCENTRIC #1 1500A133798
SWITCH GEAR 97A9248
IDLER PINION BRACKET 51A28748
DRAWER SELECTING RACK 51B28771
DRAWER SWITCH OPERATING ARM 51A32790
SWITCH DRIVE PINION 51A28766
MOTOR SWITCH 90A69068
BELL OPERATING LINE 51A32797

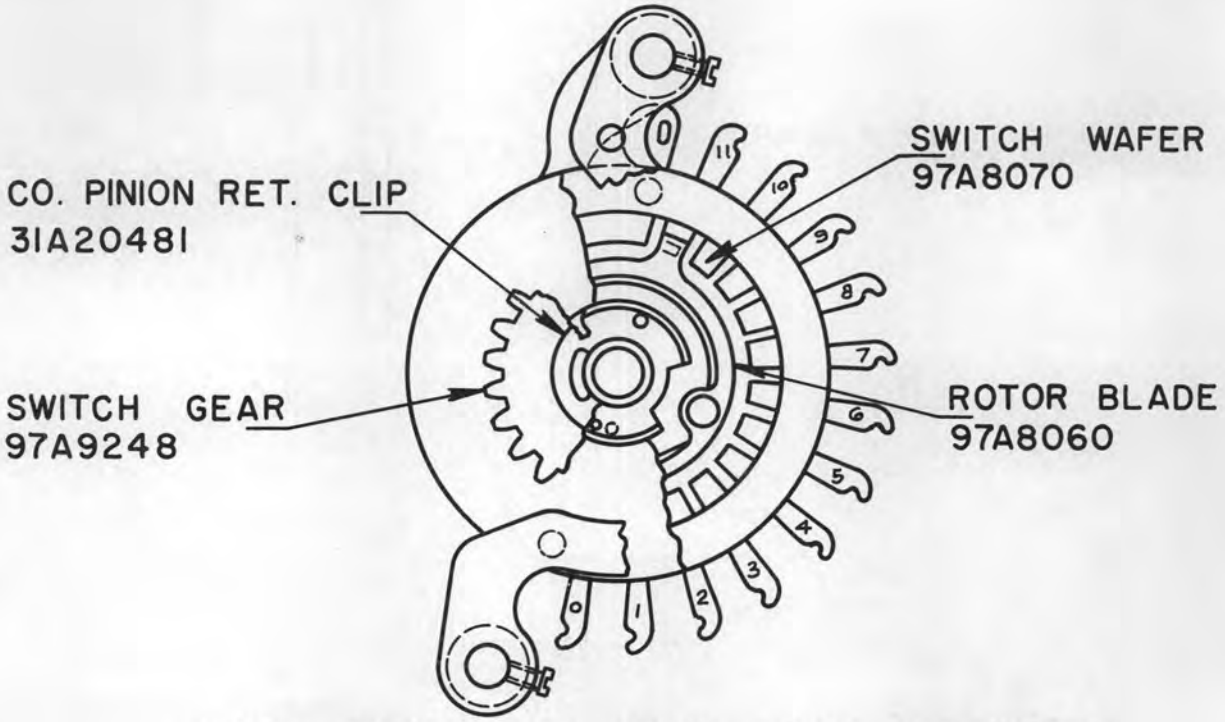
Drawer Selection

The Drawer Control Gear Segment 51B28752 is controlled from the Row 1 Indicator Segment.

As the Indicator Segment is positioned, from 3/4 to 1-1/8 T. O. H., the Drawer Control Gear Segment 51B28752 will be turned top to the front.

Through the connections of the Idler Pinions 51A28740 and 51A28742, the Drawer Selecting Rack will be raised. The bottom of the rack meshes with the Switch Drive Pinion and will turn it top to the left. The Drive Pinion meshes with the Switch Gear 97A9248 and will turn it top to the right.

RECORDING SWITCH
97B14765



(CUT AWAY VIEW FROM BACK OF SWITCH)

The Switch Gear is clutched to the Rotar Blade and will turn it top to the right to a position corresponding with the movement given the Indicator Segment.

If the "A" key had been used, the Rotor Blade would be turned to the 10th position.

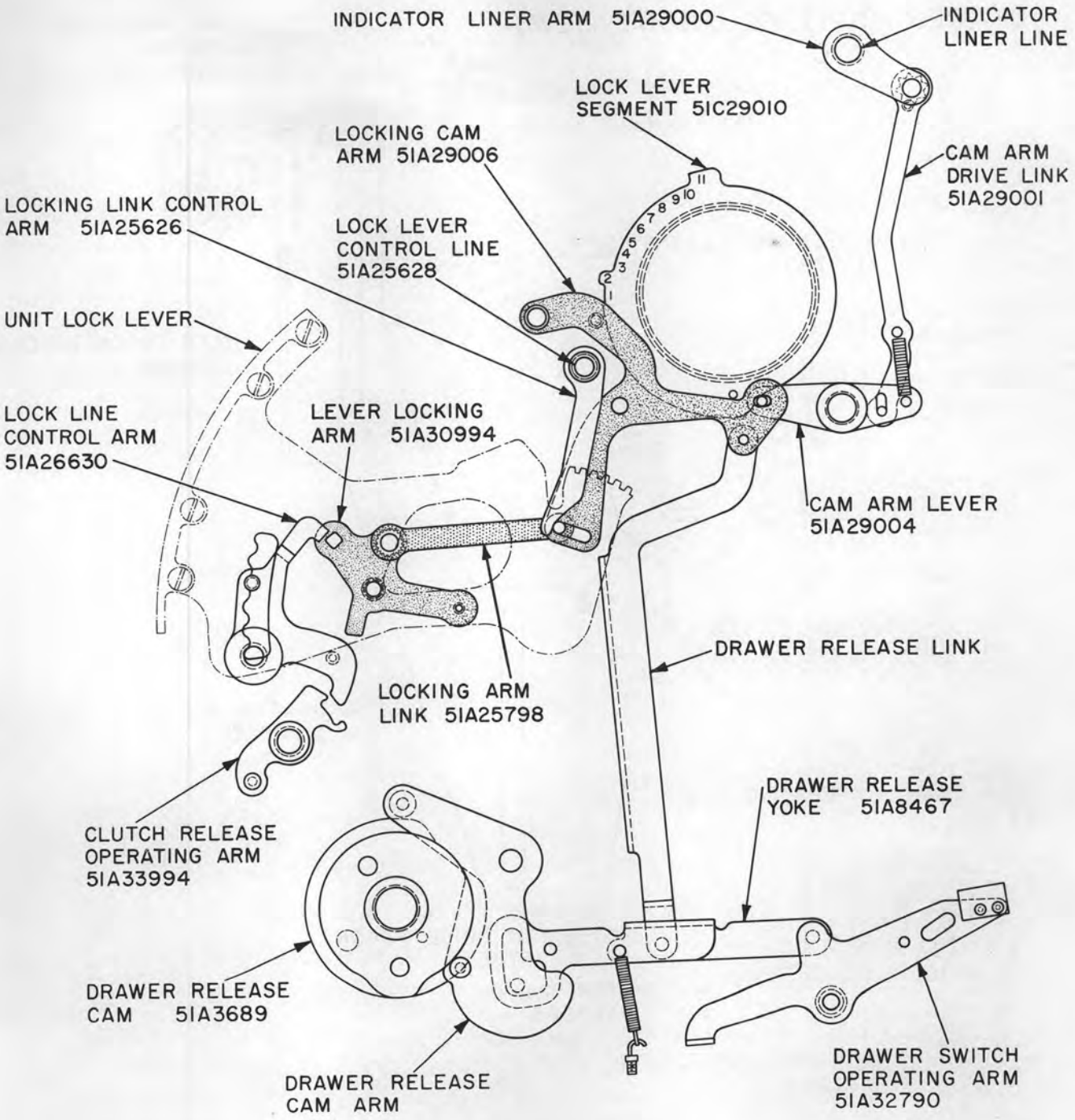
The Lock Lever Segment 51C29010 is controlled from Row 1 and will be turned to the 10th position also.

Between 1-1/4 and 1-3/8 T. O. H., the Indicator Liner is carried into mesh which will move the Locking Cam Arm 51A29006 top to the back. Since the 10th position of the Lock Lever Segment is low, the Locking Cam Arm will receive its full movement down in back and through the connections of the Drawer Release Yoke.

At 1-1/2 T. O. H., a high part of the Drawer Relaese Cam will move the Drawer Release Cam Arm bottom to the back. The stud in the Cam Arm will move the Drawer Release Yoke back and turn the Drawer Switch Operating Arm 51A32790 top to the back.

This will carry the fiber block, on the Operating Arm, down allowing spring tension to close the Motor Switch 90A69068.

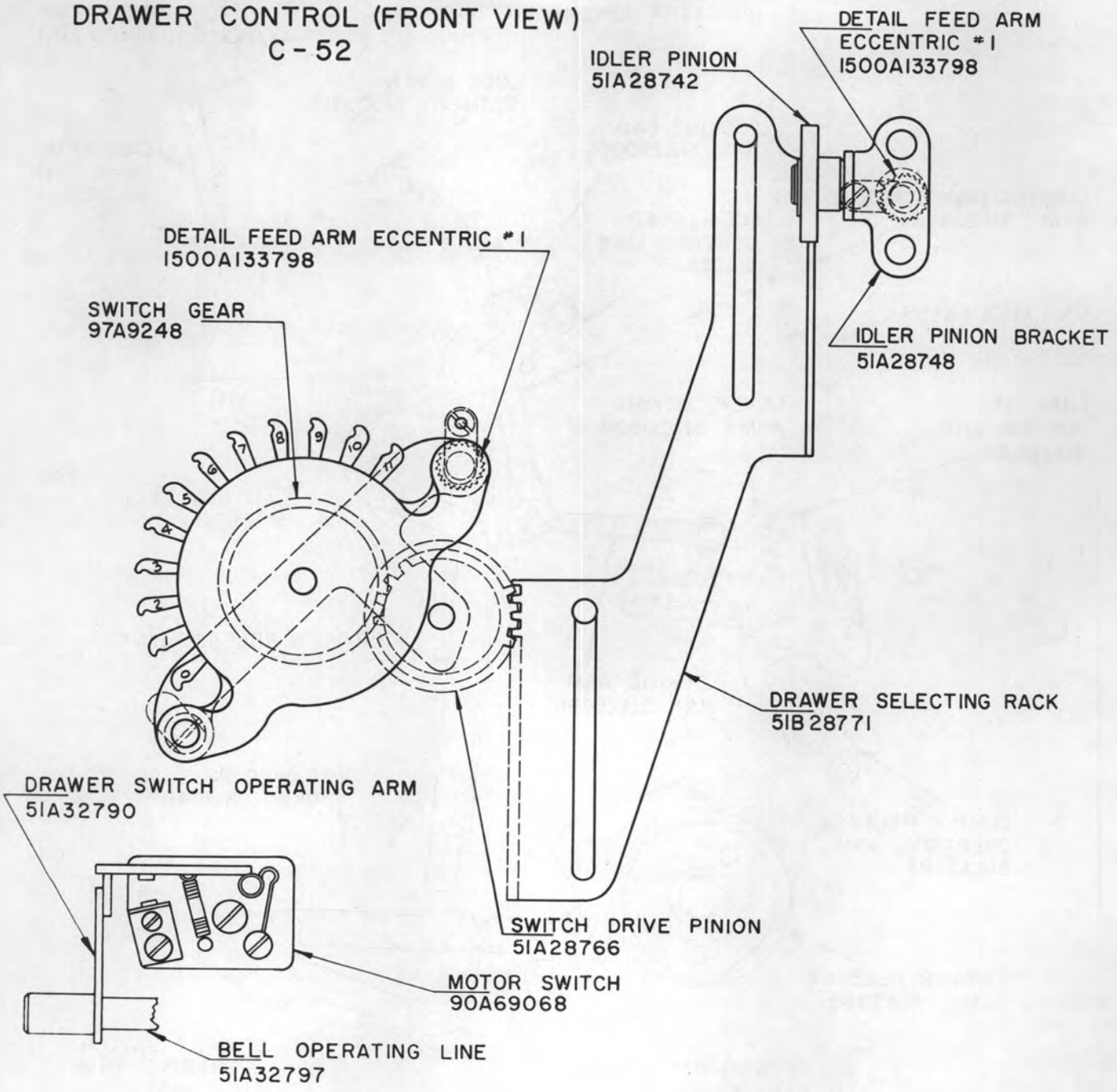
DRAWER CONTROL (C-52)


INDICATOR LINER ARM 51A29000
INDICATOR LINER LINE
LOCK LEVER SEGMENT 51C29010
LOCKING CAM ARM 51A29006
CAM ARM DRIVE LINK 51A29001
LOCKING LINK CONTROL ARM 51A25626
LOCK LEVER CONTROL LINE 51A25628
UNIT LOCK LEVER
LOCK LINE CONTROL ARM 51A26630
LEVER LOCKING ARM 51A30994
CAM ARM LEVER 51A29004
DRAWER RELEASE LINK
LOCKING ARM LINK 51A25798
DRAWER RELEASE YOKE 51A8467
CLUTCH RELEASE OPERATING ARM 51A33994
DRAWER RELEASE CAM 51A3689
DRAWER RELEASE CAM ARM
DRAWER SWITCH OPERATING ARM 51A32790

A circuit is now complete to energize the Drawer Solenoid and open the drawer.

From 1-5/8 to 1-3/4 T. O. H., movement is reversed to the Drawer Release Cam Arm and the Drawer Switch Operating Arm is raised in back opening the Motor Switch. The Drawer Solenoid will now be de-energized allowing the Drawer Catch to drop and retain the drawer when it is closed.

DRAWER CONTROL (FRONT VIEW)
C-52



ADJUSTMENT

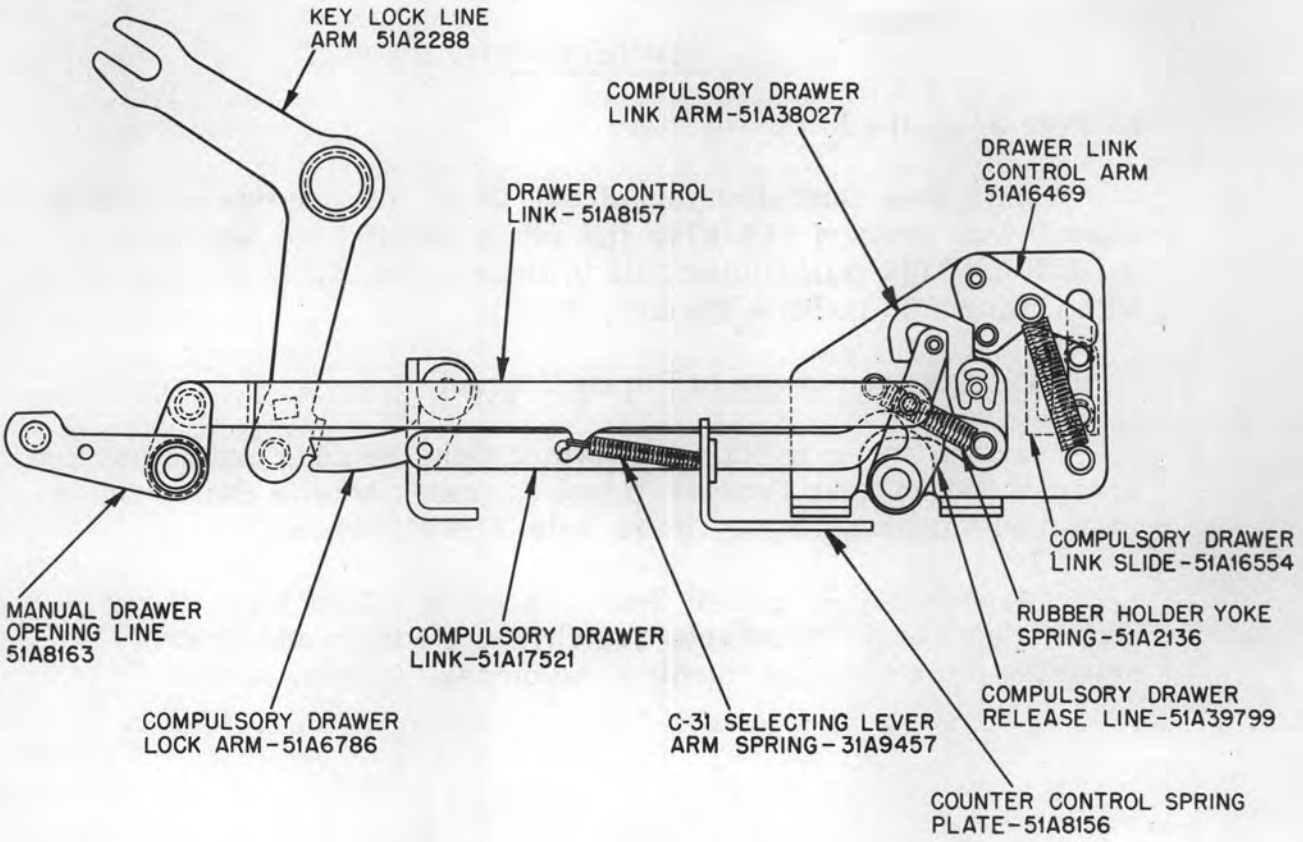
Drawer Selecting Rack

Make Item Operation to 1-3/8 T. O. H. Loosen two screws in Idler Pinion Bracket 51A28748 and adjust Detail Feed Arm Ecc. # 1 1500A133798 until timing hole in Drawer Sel. Rack is lined up with timing hole in Back Frame.

Tighten two screws in Pinion Bracket.

Loosen screw in bottom of Switch Gear Bracket and adjust Ecc. in top of Switch Gear Bracket to line up timing hole in Switch Drive Pinion with corresponding timing hole in Back Frame.

Move bottom of Switch Gear Bracket to left or right ot get proper depth of mesh between Switch Drive Pinion and Drawer Selecting Rack (deep as possible, no binds). Tighten screw.



MECHANICAL COMPULSORY DRAWER DISABLING

A disabling mechanism has been incorporated on all multiple Mechanical Drawers on the C-52.

This mechanism is located in the base of the machine with the activating lever located inside the front Printer Door next to the Right Side Frame.

The mechanism has been designed to disable the compulsory mechanism in order that all the drawers may be left open at the end of the day's business.

When the Arm that is extending to the outside of the Right Side Frame is moved down, the Manual Drawer Opening Line is turned top to the front, moving the Drawer Control Link 51A8157 to the front.

The Compulsory Drawer Release Line 51A39799 is moved top to the front, and the stud in the upper end of the arm pinned to the left end of the line moves to the front against the "hooked" portion of the Compulsory Drawer Link Arm 51A38027.

This arm is moved top to the front holding the Compulsory Drawer Link 51A17521 to the back and the front portion of the Compulsory Drawer Lock Arm is held down out of the path of the square stud in the Key Lock Line Arm 51A2288.

This permits the machine to be operated even though a drawer may be open.

By holding down on the Manual Drawer Opening Arm, the machine can be operated to open all drawers.

SECTION "L"

TRANSACTION COUNTERS

The Transaction Counters C-52 are of a new design built into a single unit that is easily removed and replaced. The unit consists of two counter lines and the upper counter line consists of a 3-wheel counter for each department, a 4-wheel Reset Counter, and a 2-wheel Item Counter, which is easily identified by the peculiar color of the wheels.

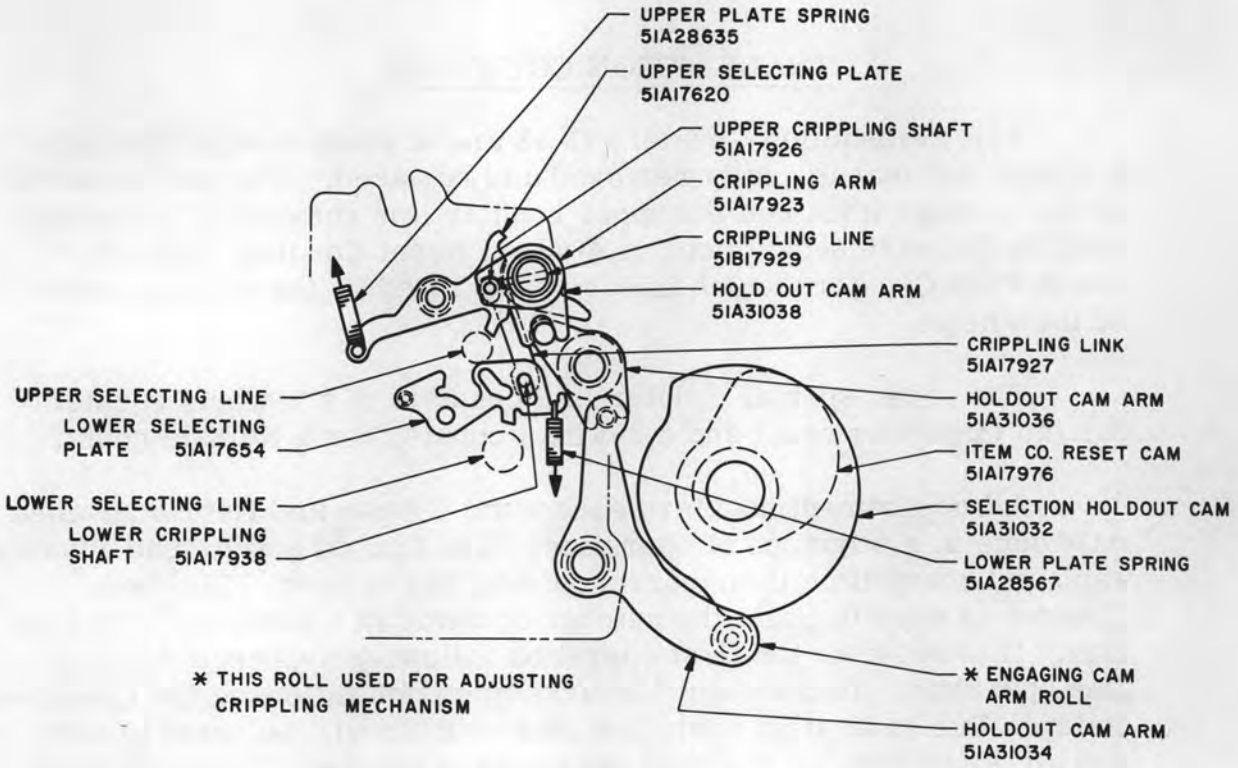
The lower special counter line consists of a 4-wheel counter for the Customer count and a 3-wheel counter for a No Sale count.

All department counters except the Coupon and Refund advance only once in a sequence of operation. The Coupon and Refund advance each and every time their corresponding key is used. The Item Counter is used to count the number of items in a sequence of operation. It is reset on the first operation following a Change-Balance Due operation. In the event the first operation following the Change-Balance Due is an item operation, the counter will be reset to zero and advanced one. If the first operation is another Change-Balance Due operation, the item counter will be reset to zero.

The customer counter advances on a Change-Balance Due operation and if it is followed by another Change-Balance Due operation it will be disabled and the No Sale counter advanced.

The Reset Counter adds on the first "Read Group", "Reset Row 2 +" or "Reset Row 2" - operation. It is reset along with the Department counters whenever the Item Counter is reset the first time following one of the above operations.

SPECIAL CO. CRIPPLING U.L.L. IN REGISTER
(C-52)



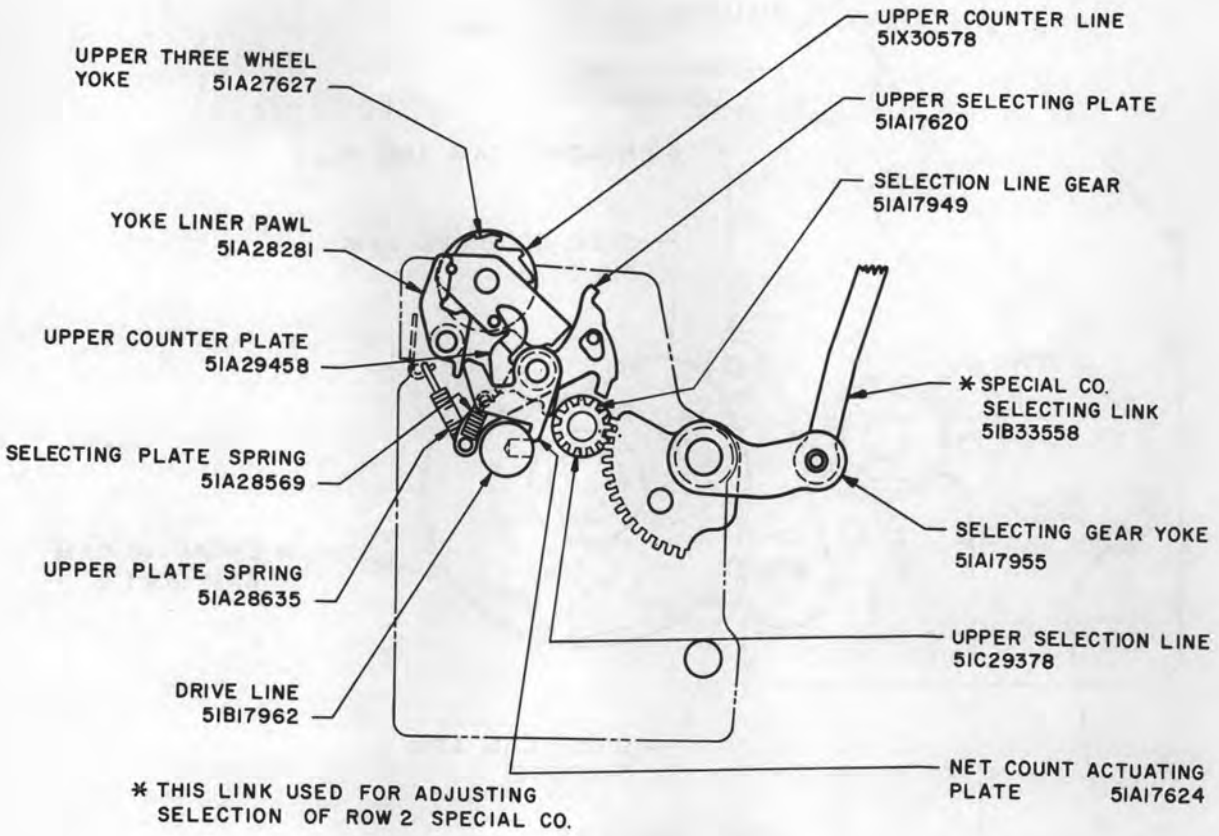
ROW 2 SPECIAL COUNTERS

In the home position, the high portion of the Reset Cam is over the roll and stud in the Hold-Out Cam Arm, holding the Upper and Lower Crippling Shafts up, which in turn holds the Upper and Lower Selecting Plates top to the front. In this position the "tails" of these Plates are held above the Selection Lines.

Between 1/8 and 3/8 turns of the handle, the Row 2 Indicator Segment is carried top to the back, to the zero position. The Special Counter Selecting Link, which is connected to the Segment, is carried up and will turn the Selecting Gear Yoke all the way top to the front.

Between 3/4 and 1-1/8 turns of the handle, the Row 2 Indicator Segment is carried back down to a position corresponding to the key in Row 2 that has been depressed. The Selecting Gear Yoke will be turned top to the back, and being in mesh with the Selecting Line Gear which is pinned to the Selection Shaft will turn it and the Shaft top to the front.

ROW 2 SPECIAL CO. SELECTION
(C-52)

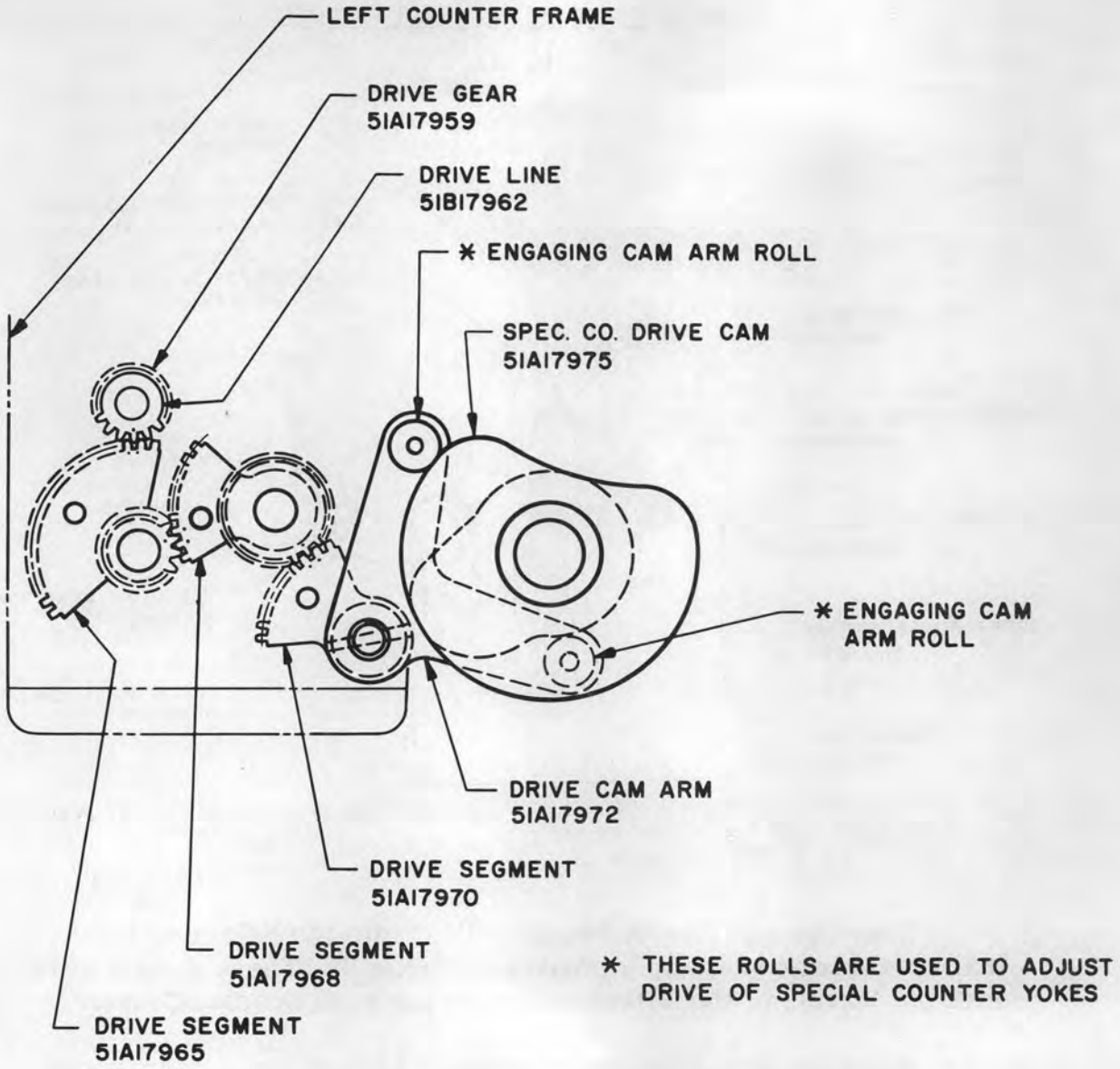

UPPER THREE WHEEL YOKE 51A27627
YOKE LINER PAWL 51A28281
UPPER COUNTER PLATE 51A29458
SELECTING PLATE SPRING 51A28569
UPPER PLATE SPRING 51A28635
DRIVE LINE 51B17962
* THIS LINK USED FOR ADJUSTING SELECTION OF ROW 2 SPECIAL CO.
UPPER COUNTER LINE 51X30578
UPPER SELECTING PLATE 51A17620
SELECTION LINE GEAR 51A17949
* SPECIAL CO. SELECTING LINK 51B33558
SELECTING GEAR YOKE 51A17955
UPPER SELECTION LINE 51C29378
NET COUNT ACTUATING PLATE 51A17624

There is a series of dwells drilled into the Selection Line that correspond to the Key positions of Row 2. These dwells work with the "tails" of the Selecting Plates for each Special Counter.

When the Row 2 Indicator Segment is positioned corresponding to the Key depressed, the Selection Line is turned until a dwell is directly under the "tail" of the Selecting Plate for the Special Counter which corresponds to the Key.

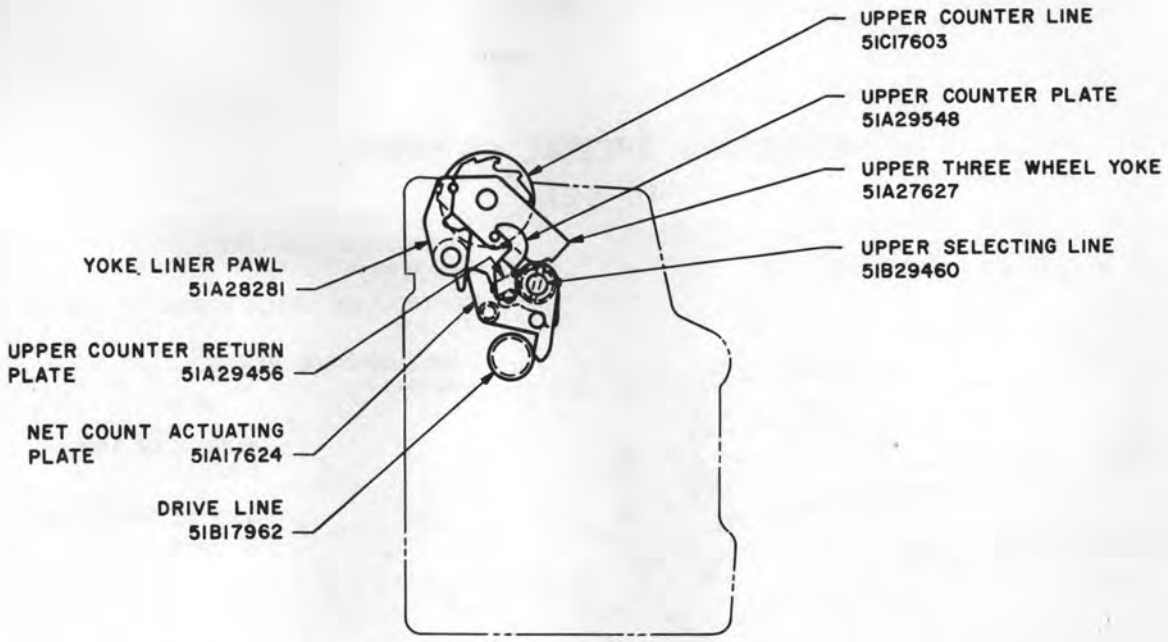
At 1-1/4 turn of the handle, the low part of the Reset Cam will be moved over the roll and stud in the Hold-Out Cam Arm, allowing it to move up. The Upper and Lower Crippling Shafts will move down and allow the "tails" of the Selection Plates to move down and sense for the dwells in the Selection Line.

The Selection Plates which do not have a dwell in the Selection Line under the "tail" will come down against the Selection Line and be stopped. In the position where the dwell is in line with the "tail" of the Selecting Plate, the Plate will move down in the back and the front end will move up against the stud in the Upper Counter Plate. This Stud is held against the front extension of the Selecting Plate by spring tension. As the Selecting Plate moves up, the Net Count Actuating plate will move up to the front and the rear extension will move down against the Drive Line.



The Drive Line has a series of dwells drilled in it that are in line with the Upper Counter Plates. These dwells work with the rear portion of each Plate.

Between 1-1/2 and 1-3/4 turns of the handle, the high portion of the Special Counter Drive Cam will come over the lower roll and stud in the Special Counter Drive Cam Arm, which is pinned to the Drive Arm Cam Line. The Cam Arm and Line will turn top to the back, as will all parts pinned to the line. The Drive Segment 51A1790, which is pinned to the left end of the Line, is in mesh with the Drive Segment 51A17968, which in turn mesh with the Drive Segment 51A 1965. The latter Segment is meshed with the Pinion, which is pinned to the extreme left end of the Drive Line. When the Special Counter Drive Cam Arm is moved top to the back, the Drive Line will be turned top to the front, by the above mentioned parts. The dwell in the Drive Line will pick up the back extension of the Net Count Actuating Plate and cause it to move top to the back.

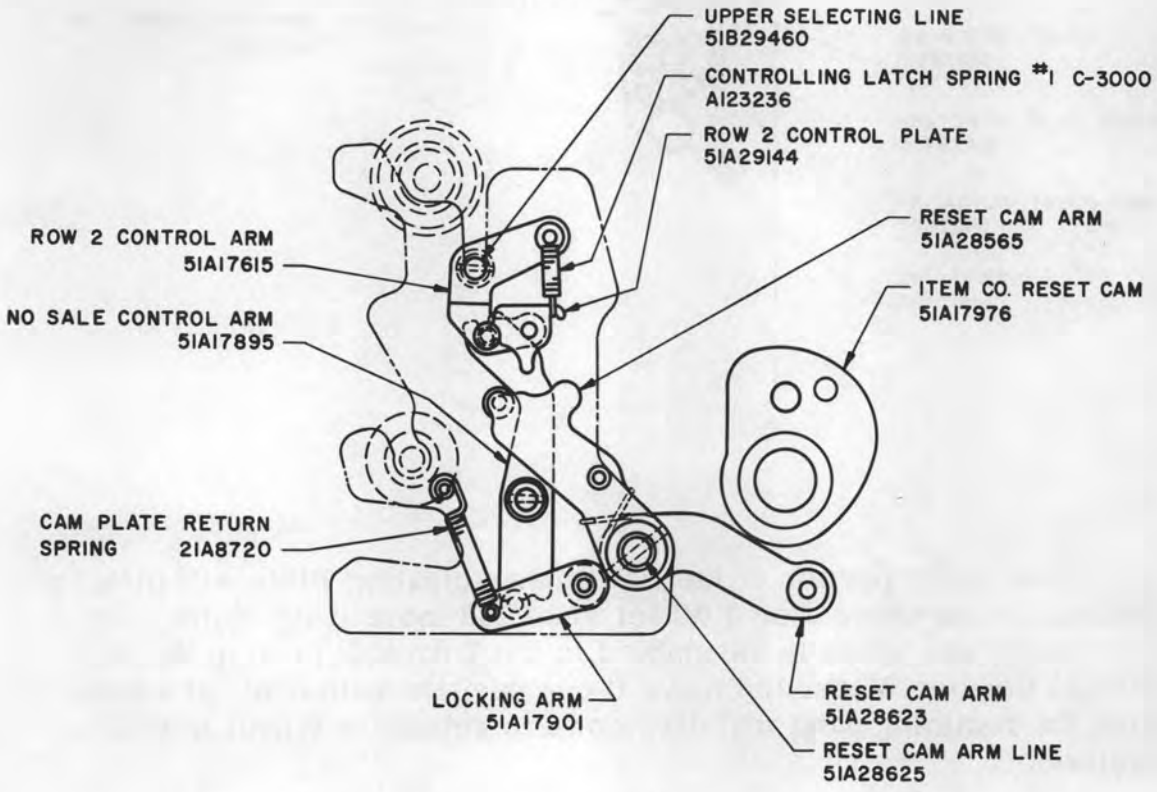


The upper portion of the Net Count Actuating Plate will pick up the Stud in the upper 3 or 4 Wheel Yoke and move it top to the front. The Feed Pawl which is assembled in the Yoke will pick up the unit Special Counter Wheel and move it one position with lead, at which time the retaining pawl will drop down to retain the Wheel in this position.

Slightly past 1-3/4 turns of the handle, the high portion of the Special Counter Drive Cam will move under the upper roll and stud on the Drive Cam Arm and move it top to the front. This will cause the Drive Line to be moved top to the back and the dwell in it, which is in line with the selected Net Count Actuating Plate will pick up the back portion of the Plate and move it top to the front.

Since all the Row 2 Special Counters except Coupon and Refund are net count, the Feed Yoke will be held in the fed position at this time by its retainer. At the time the Yoke was positioned top to the front to advance the unit wheel, the stud in the Yoke that is contacted by the Net Count Actuating Plate will move against and move the Upper Counter Plate top to the back. The Stud that extends to the left of the Plate will contact the Upper Counter Return Plate that is pinned to the Upper Selecting Line, and move it and the line top to the back.

RESTORING SPECIAL CO. YOKES
(C-52)

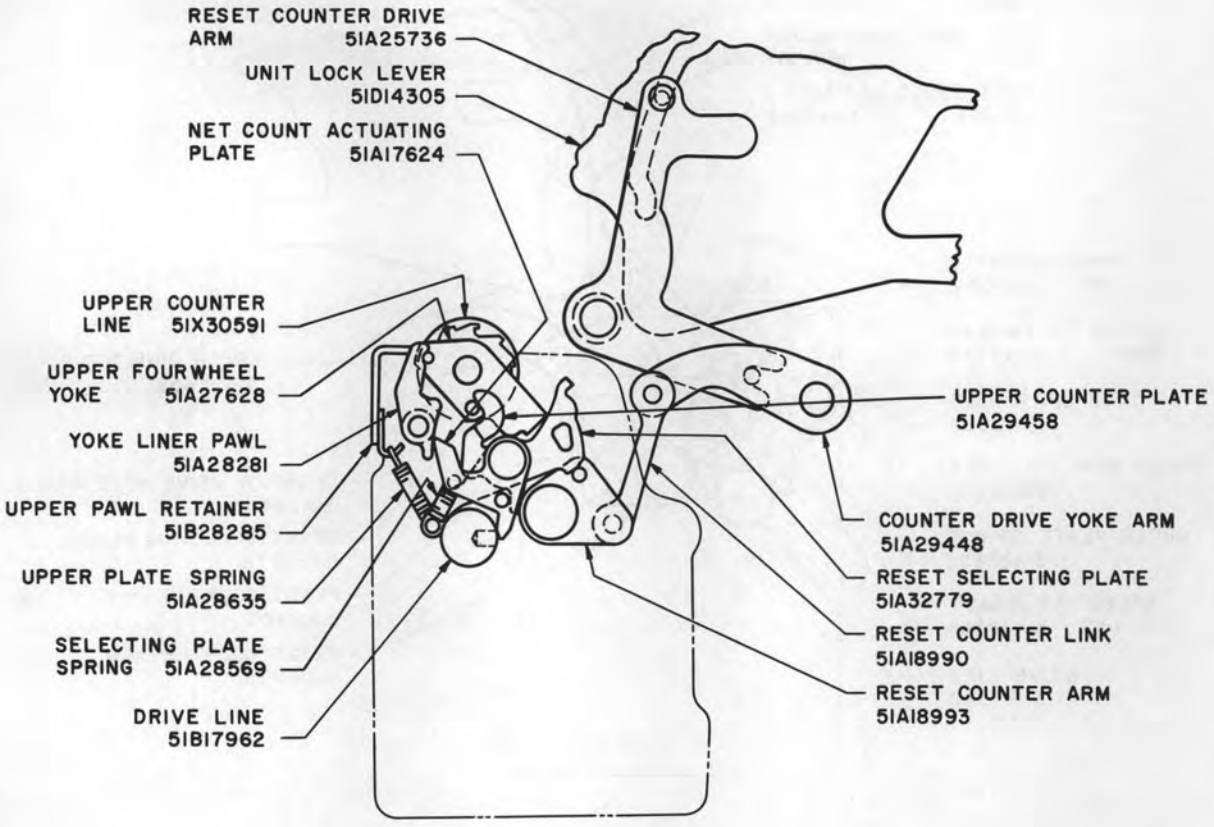


Pinned to the extreme right end of the Upper Selecting Line is the Reset Arm. The Reset Arm has assembled to it the Row 2 Control Plate which is flexible top to the back. As the line is turned top to the back, the Reset Arm is moved top to the back and the Row 2 Control Plate is placed in the path of the stud in the top part of the Reset Cam Arm 51A20565.

On the first operation following a Change-Balance Due the Reset Cam Arm will be moved top to the back. The Stud in the upper end of the Arm will contact the Row 2 Control Plate and move it and the Reset Arm and the Upper Selecting Line top to the front.

The Upper Counter Return Plate will move down in the front on the stud in the Net Count Actuating Plate. The Plate will contact the Stud in the Feed Yoke and restore it to its home position, ready to advance the Special Counter whenever it is again selected.

RESET COUNTER
(C-52)

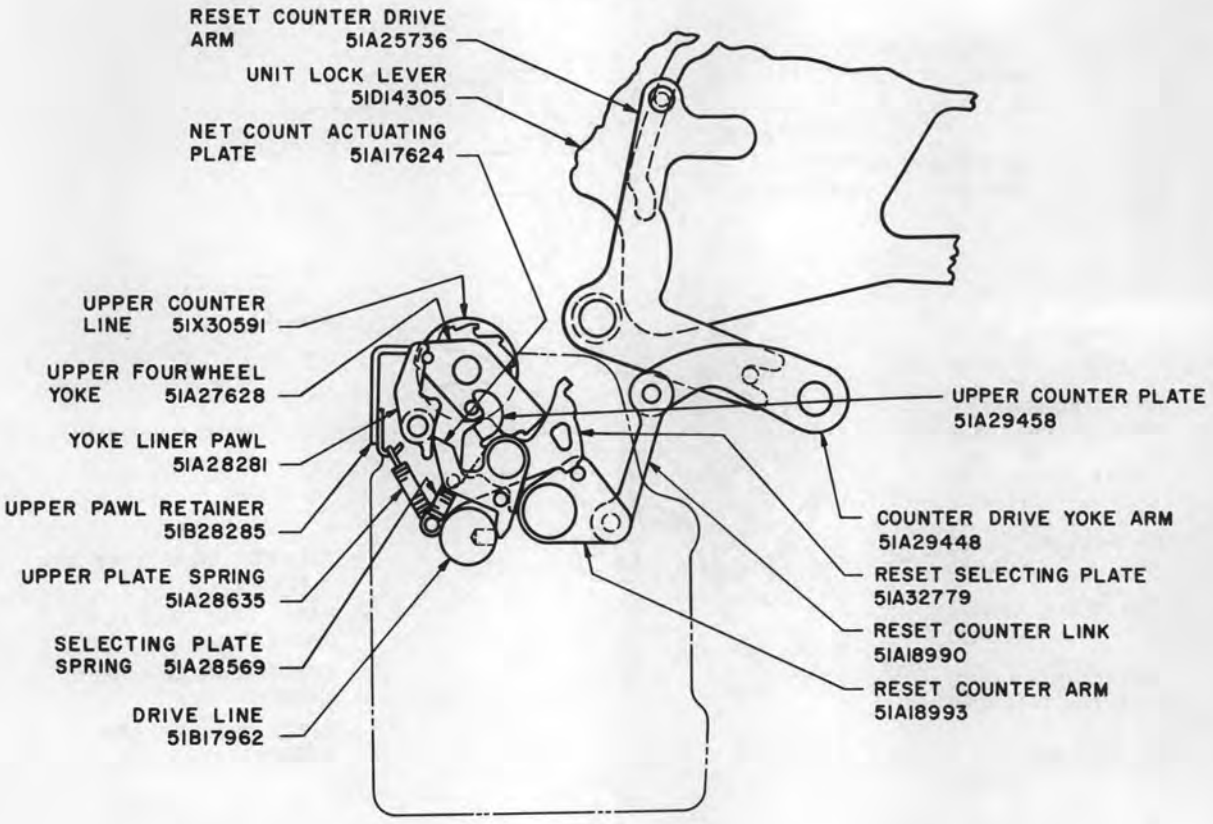

RESET COUNTER DRIVE ARM 51A25736
UNIT LOCK LEVER 51D14305
NET COUNT ACTUATING PLATE 51A17624
UPPER COUNTER LINE 51X30591
UPPER FOURWHEEL YOKE 51A27628
YOKE LINER PAWL 51A28281
UPPER PAWL RETAINER 51B28285
UPPER PLATE SPRING 51A28635
SELECTING PLATE SPRING 51A28569
DRIVE LINE 51B17962
UPPER COUNTER PLATE 51A29458
COUNTER DRIVE YOKE ARM 51A29448
RESET SELECTING PLATE 51A32779
RESET COUNTER LINK 51A18990
RESET COUNTER ARM 51A18993

"RESET" SPECIAL COUNTER

The selection of the Reset Counter is controlled by the Unit Lock Lever. Whenever the Unit Lock Lever is moved to the "Reset Row 2" -, "Reset Row 2 +" or "Read Group" position, the Reset Counter is selected to advance.

The stud in the upper end of the Reset Counter Drive Arm 51A4156 rides in the camming raceway in the Unit Lock Lever, and when the Lever is moved to the "Read Group,"Reset Row 2-" or "Reset Row 2+" position, the Arm will be moved top to the back. This arm yokes the Stud in the Counter Drive Yoke Arm 51A29448, which is swung on the Zero Stop Lever Line.

RESET COUNTER
(C-52)


RESET COUNTER DRIVE ARM 51A25736
UNIT LOCK LEVER 51D14305
NET COUNT ACTUATING PLATE 51A17624
UPPER COUNTER LINE 51X30591
UPPER FOURWHEEL YOKE 51A27628
YOKE LINER PAWL 51A28281
UPPER PAWL RETAINER 51B28285
UPPER PLATE SPRING 51A28635
SELECTING PLATE SPRING 51A28569
DRIVE LINE 51B17962
UPPER COUNTER PLATE 51A29458
COUNTER DRIVE YOKE ARM 51A29448
RESET SELECTING PLATE 51A32779
RESET COUNTER LINK 51A18990
RESET COUNTER ARM 51A18993

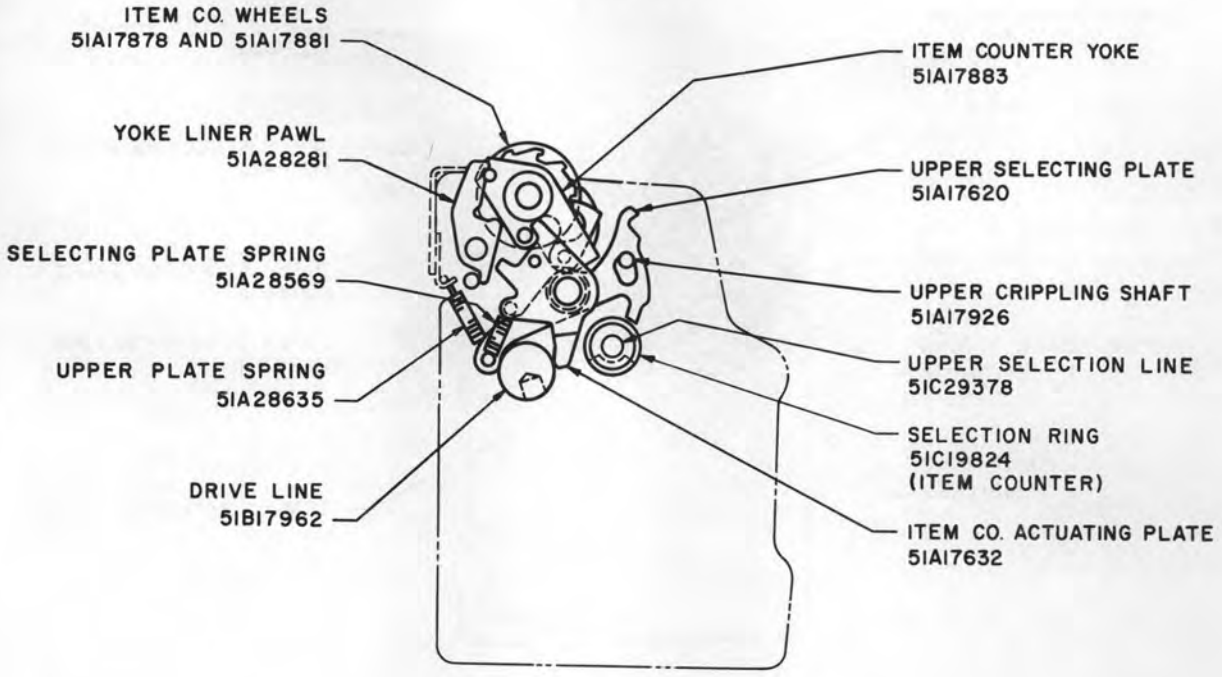
As the Reset Counter Drive Arm is moved top to the back, the Counter Drive Yoke Arm will move down in the front and the stud in the Reset Counter Arm will move down away from the Reset Counter Selecting Plate. The spring tension on the front of this Plate will cause it to follow the Stud.

As the front end of the Reset Selecting Plate moves up it contacts the stud in the front end of the Upper Counter Plate, moving the back extension of it down on the Drive Line.

Between 1-1/2 and 1-3/4 turns of the Handle the Drive Line will be moved top to the front and the dwell which is in line with the Upper Counter Plate will cause it to move top to the back. The upper end of the Plate will contact the stud in the Feed Yoke and move it top to the front, to advance the Counter. The Feed Yoke will be retained in this position by its retainer.

At the same time, the Stud in the Feed Yoke will contact the Net Count Actuating Plate and move it top to the back. The Stud in the Plate will move up and move the Upper Counter Return Plate and Upper Selecting Line top to the front. The Feed Yoke for the Reset Counter is restored to its home position on the first operation that resets the Item Counter. This is accomplished as previously explained in the Row 2 Special Counters.

ITEM COUNTER
(C-52)



ITEM COUNTER

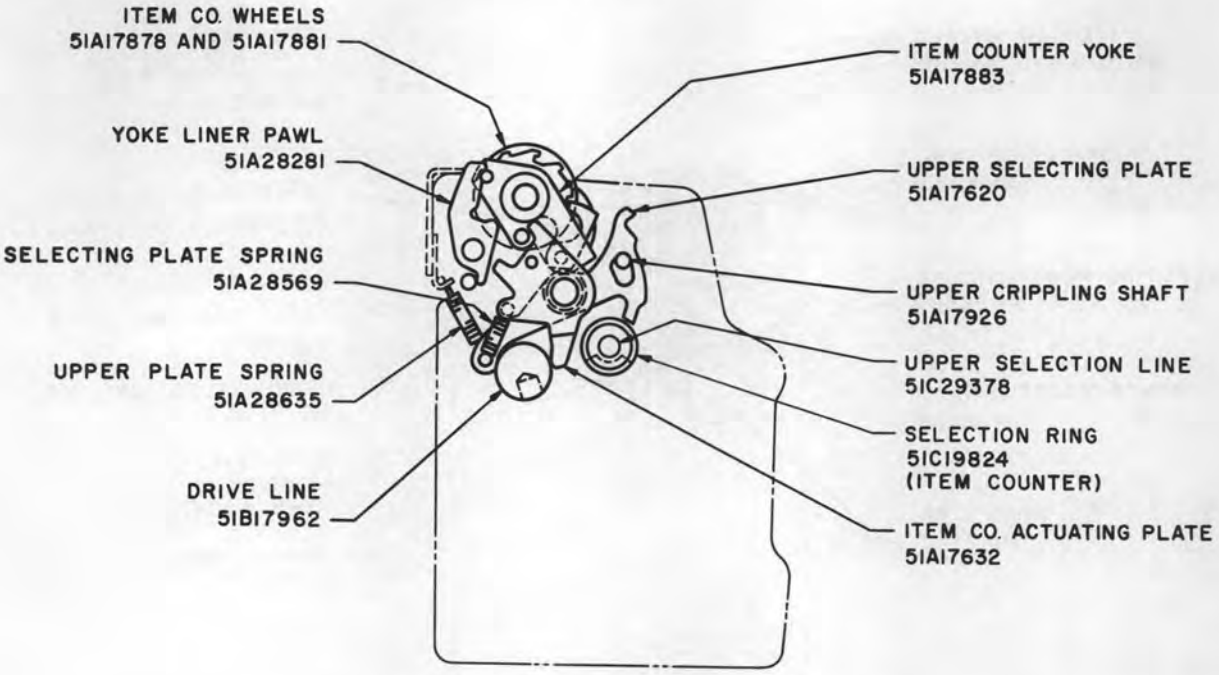
The Item Counter advances on every item operation with the exception of the Tax, Refund, and the Coupon.

Whenever the Row 2 Indicator Segment is positioned to Meat, Produce, Miscellaneous, Grocery, or Bakery position, the Selecting Gear Yoke will position the Selecting Line Gear and Selection Line so that the Selecting Ring will be positioned to a low surface under the "tail" of the Upper Selecting Plate for the Item Counter.

The Upper Selecting Plate for the Item Counter is held above the Upper Selecting Line by the Upper Crippling Shaft in the home position.

From 1/8 to 3/8 turns of the handle the Row 2 Indicator Segment is carried top to the back to the zero position. Between 3/4 and 1-1/8 turns of the handle the Segment is carried back down to the position corresponding to the key depressed. If this position is one of the previously mentioned, the low surface of the Selecting Ring will be directly under the "tail" of the Selecting Plate for the Item Counter.

ITEM COUNTER
(C-52)



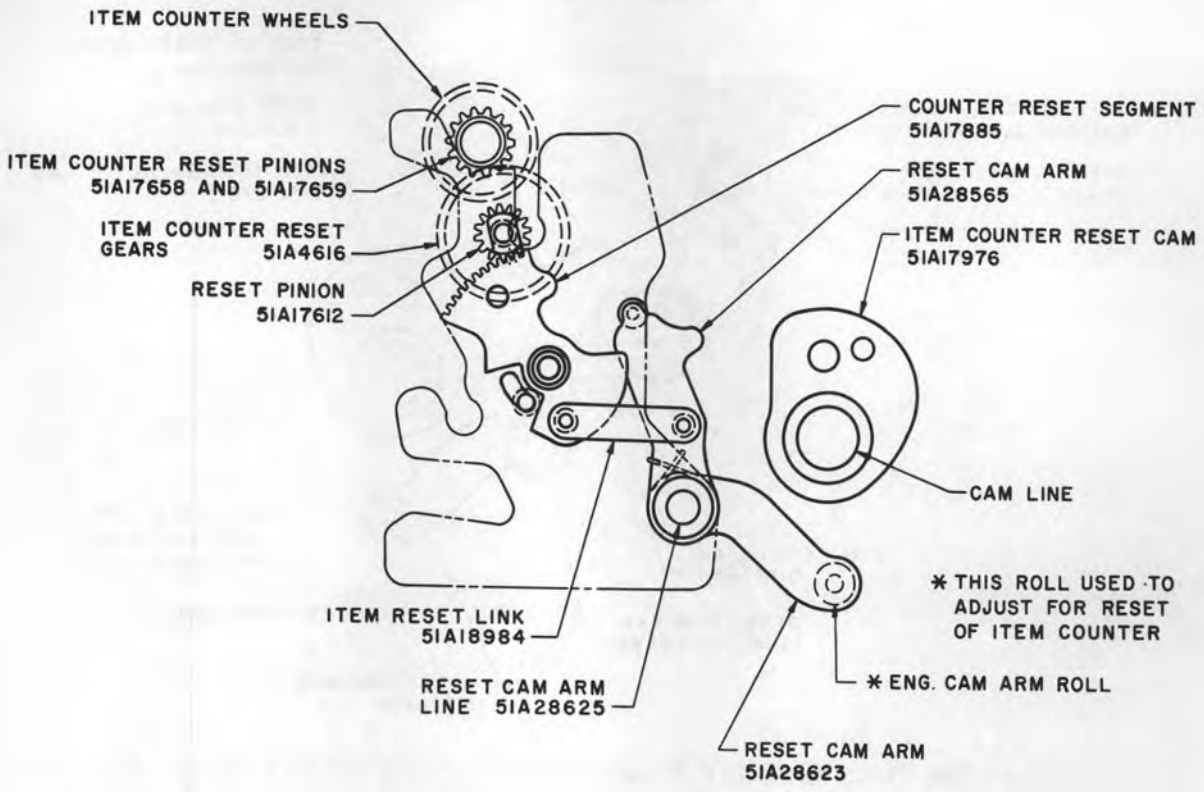
At 1-1/4 turns of the handle, the Hold-Out Cam Arm will allow the Upper Crippling Shaft to move down and free up the Selecting Plate for the Item Counter. With the low surface of the Selecting Ring under the "tail" of the Selecting Plate, the Plate will move up in the front. The stud in the front of the Selecting Plate will move the Item Counter Actuating Plate up so that the back extension will be down on the Drive Line.

Between 1-1/2 and 1-3/4 turns of the Handle, the Drive Line moves top to the front, and the dwell will pick up the "tail" of the Item Counter Actuating Plate and move it top to the back. The Plate yokes a stud in the Item Counter Yoke and moves it top to the front, advancing the Unit Wheel one position.

Slightly past 1-3/4 turns of the handle, reverse movement is given the Drive Line and the dwell will pick up the lower extension of the Item Counter Actuating Plate and move it top to the back to the "home" position.

In the event the Row 2 Indicator Segment is positioned to either Tax, Coupon or Refund, a high surface of the Selecting Ring will be under the "tail" of the Selecting Plate. When the Crippling Shaft is allowed to move down to free up the plate, the "tail" will not move down far enough to position the back extension of the Item Counter Actuating Plate down on the Drive Line. Therefore, the Item Counter Actuating Plate will receive no movement between 1-1/2 and 1-3/4 turns of the handle.

RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51AI7658 AND 51AI7659
ITEM COUNTER RESET GEARS 51A4616
RESET PINION 51AI7612
COUNTER RESET SEGMENT 51AI7885
RESET CAM ARM 51A28565
ITEM COUNTER RESET CAM 51AI7976
CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51AI8984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

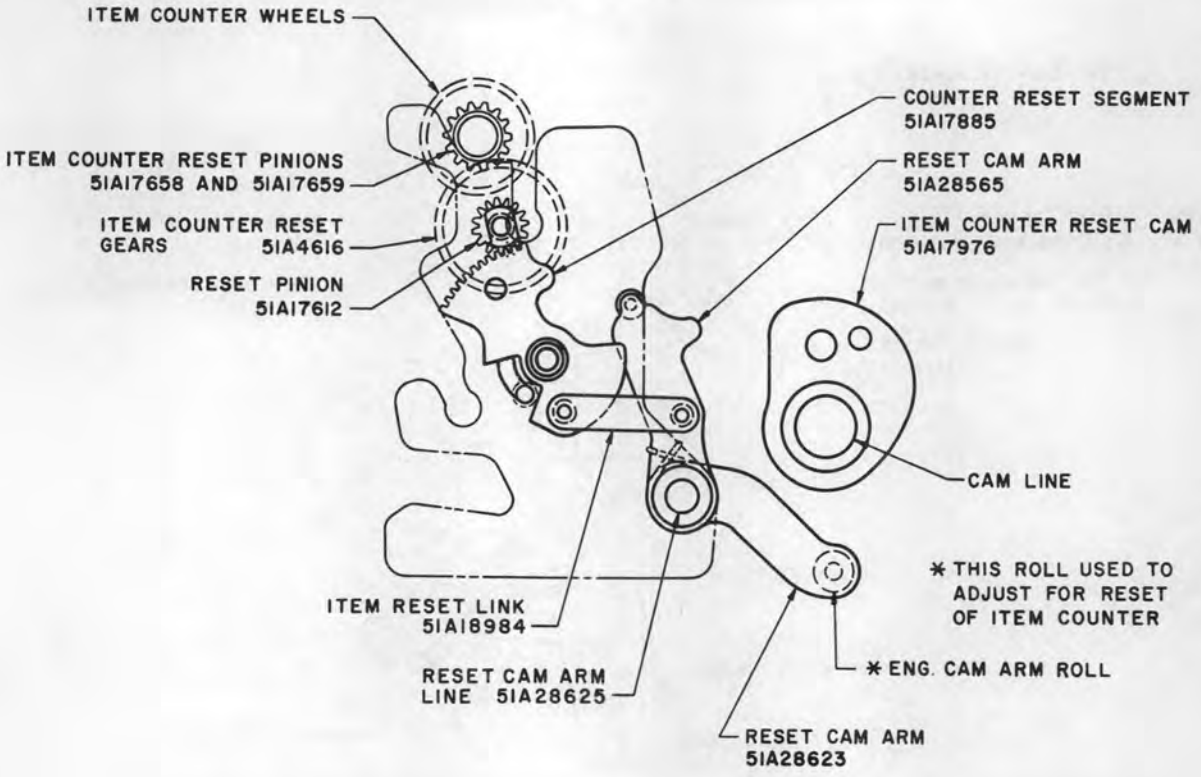
As was previously explained, the Item Counter is reset on the first operation following a Change-Balance Due operation.

When the Reset Cam Arm 51A28623 is in its home position, the Roll and Stud in the back of the Arm is down out of the path of the high surface of the Item Counter Reset Cam.

On a Change Balance Due operation, the Customer Counter will be advanced. When the Customer Counter Actuating Plate is moved up to advance the Customer Counter, the stud in the Plate, which extends through the right Counter Frame and rides in a camming surface on the Item Counter Reset Segment, moves up and moves the Reset Segment top to the back. The Item Counter Reset Link is moved to the front, and being connected to the Reset Cam Arm 51A28565, will move it top to the front.

The Reset Cam Arm, which is pinned to the Reset Cam Arm Line 51A28625, will move it and the Reset Cam Arm 51A28623 top to the front. This places the roll and stud in the back end of the Reset Cam Arm 51A28623 in the path of the high portion on the Item Counter Reset Cam.

RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51AI7658 AND 51AI7659
ITEM COUNTER RESET GEARS 51A4616
RESET PINION 51AI7612
COUNTER RESET SEGMENT 51AI7885
RESET CAM ARM 51A28565
ITEM COUNTER RESET CAM 51AI7976
CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51AI8984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

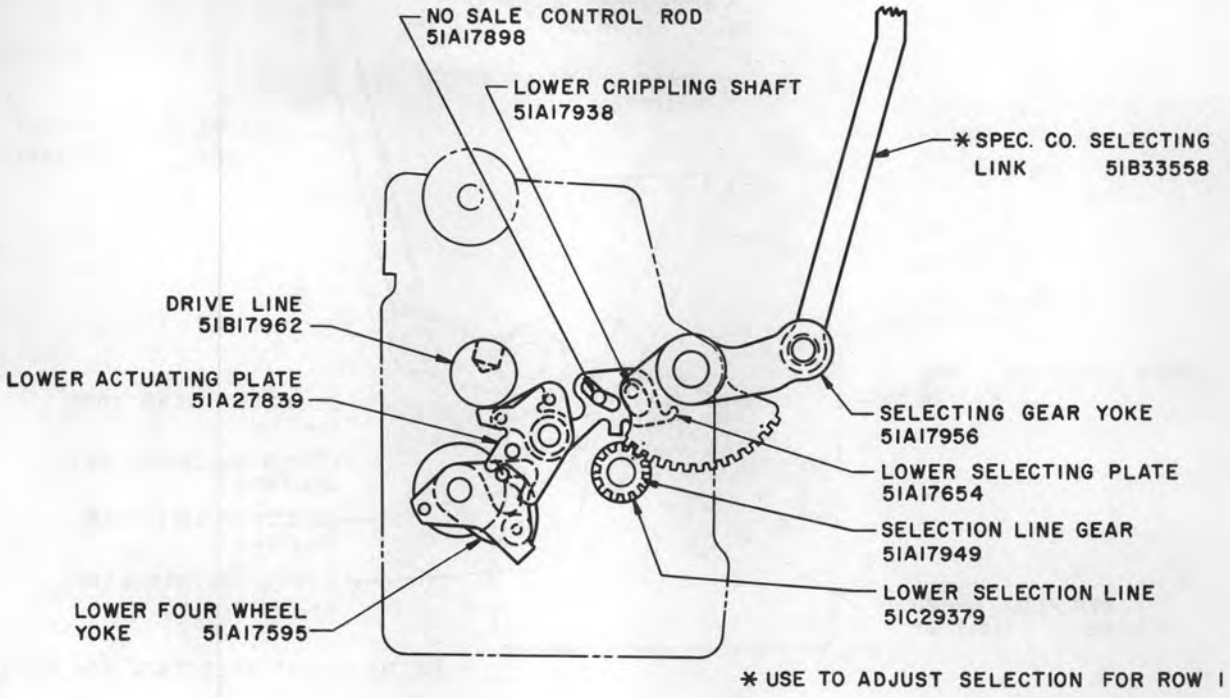
When the Item Counter Reset Segment was moved top to the back, the Reset Pinion which is meshed with Segment is turned top to the front. The hub of the Reset Pinion extends to the right through the two Item Counter Reset Gears. These Gears have assembled in them Reset Pawls which ride the Hub of the Reset Pinion.

When the Reset Pinion is moved top to the front, the two Reset Pawls in the Item Counter Reset Gears will ratchet over the spline cut in the Reset Pinion Hub.

Between 1/8 and 3/4 turns of the Handle on the following operation, the high portion of the Special Counter Reset Cam will come over the Roll and Stud in the rear portion of the Reset Cam Arm 51A28623 and move it and the Reset Cam Arm Line top to the back. The Reset Cam Arm 51A28565 will move top to the back, pulling the Item Reset Link to the back. The Item Counter Reset Segment will move top to the front, causing the Reset Pinion to move top to the back. The spline cut in the Hub of the Pinion will pick up the Reset Pawl in the Item Counter Reset Gears and turn them top to the back.

These Gears are meshed with the Item Counter Reset Pinion 51A17658 and 51A17659, which are tubed to the Item Counter Wheels. The Reset Pinion and Item Counter Wheels will be turned top to the front, to the zero position, resetting the Item Counter.

ROW I SPECIAL CO. SELECTION
(C-52)



CUSTOMER COUNTER

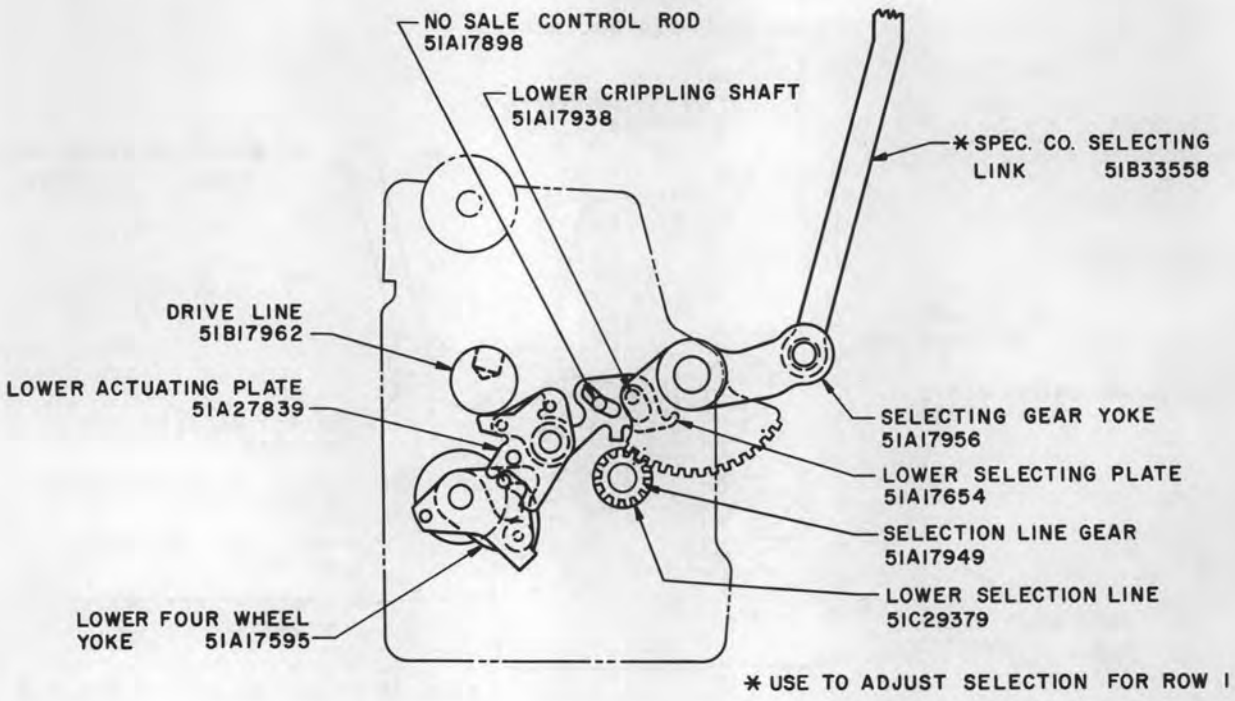
Whenever a Change-Balance Due operation is made to complete a sequence, the Customer Counter will be advanced.

When the machine is operated on a Change-Balance Due, the Indicator Segment for Row 2 will be positioned to the 11th position on a Balance Due operation and the zero position on a Change operation. In either of these positions the Upper Selecting Line will be positioned so that none of the Special Counters in the Upper Counter Line are selected.

The Indicator Segment for Row 1 will be positioned to the Change-Balance Due position, and through the Special Counter Selecting Link and Selecting Gear Yoke 51A17955, a low surface on the Selection Ring 51C19824 will be under the "tail" of the lower Selecting Plate 51A17645, for the Customer Counter.

ROW I SPECIAL CO. SELECTION

(C-52)

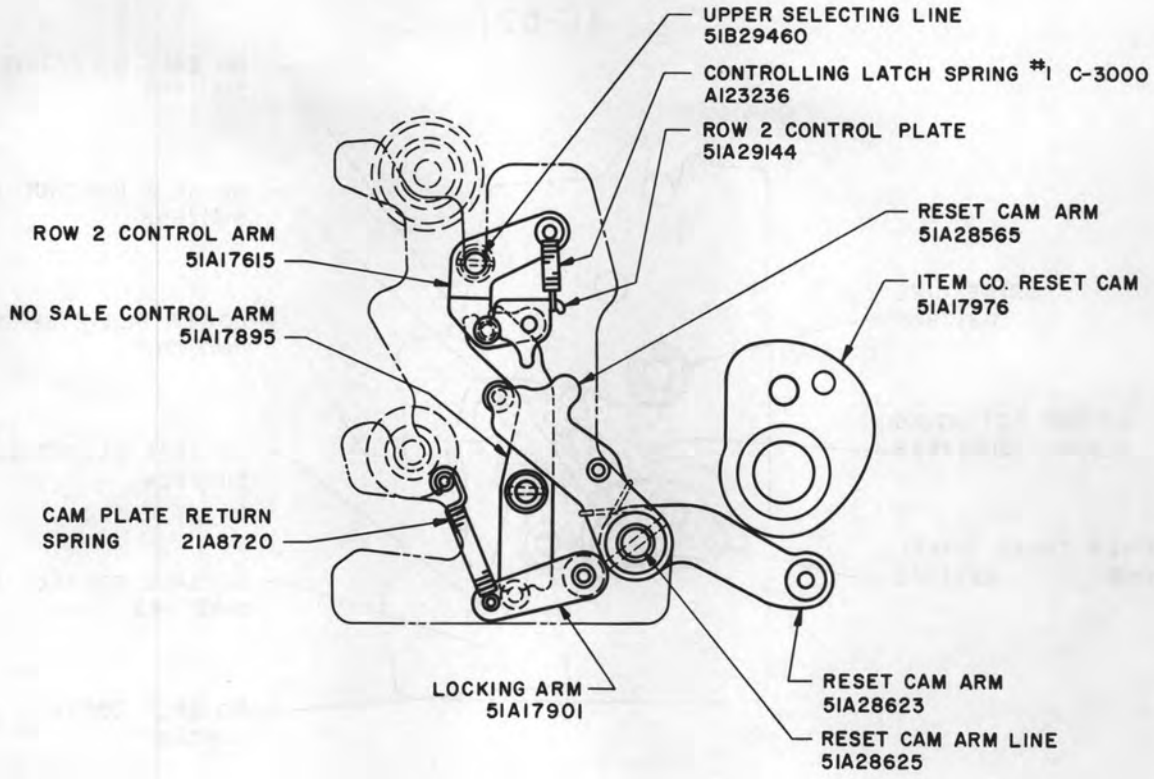


At 1-1/4 turns of the handle, the Lower Crippling Shaft will allow the Lower Selecting Plates to move down and sense for the high and low surfaces on the Selection Ring. At this time a low surface will be positioned under the Selecting Plate, allowing it to move down, which will move the lower Actuating Plate 51A27839 up against the Drive Line.

Between 1-1/2 and 1-3/4 turns of the handle, the Drive Line will move top to the front, and the dwell in the line will pick up the Actuating Plate and move it top to the back.

The Actuating Plate yokes the stud in the right side of the Customer Counter Feed Yoke and will move it top to the front, advancing the Unit Wheel of the Customer Counter.

Slightly past 1-3/4 turns of the handle, the Drive Line will receive reverse movement, and the dwell in the line will pick up the Actuating Plate and restore it and the Feed Yoke to their home position. When the Actuating Plate is moved top to the back between 1-1/2 and 1-3/4 turns of the Handle, the stud that extends to the right through the right Counter Frame, moves the Counter Reset Segment to the back to enable the Item Counter reset mechanism to function.

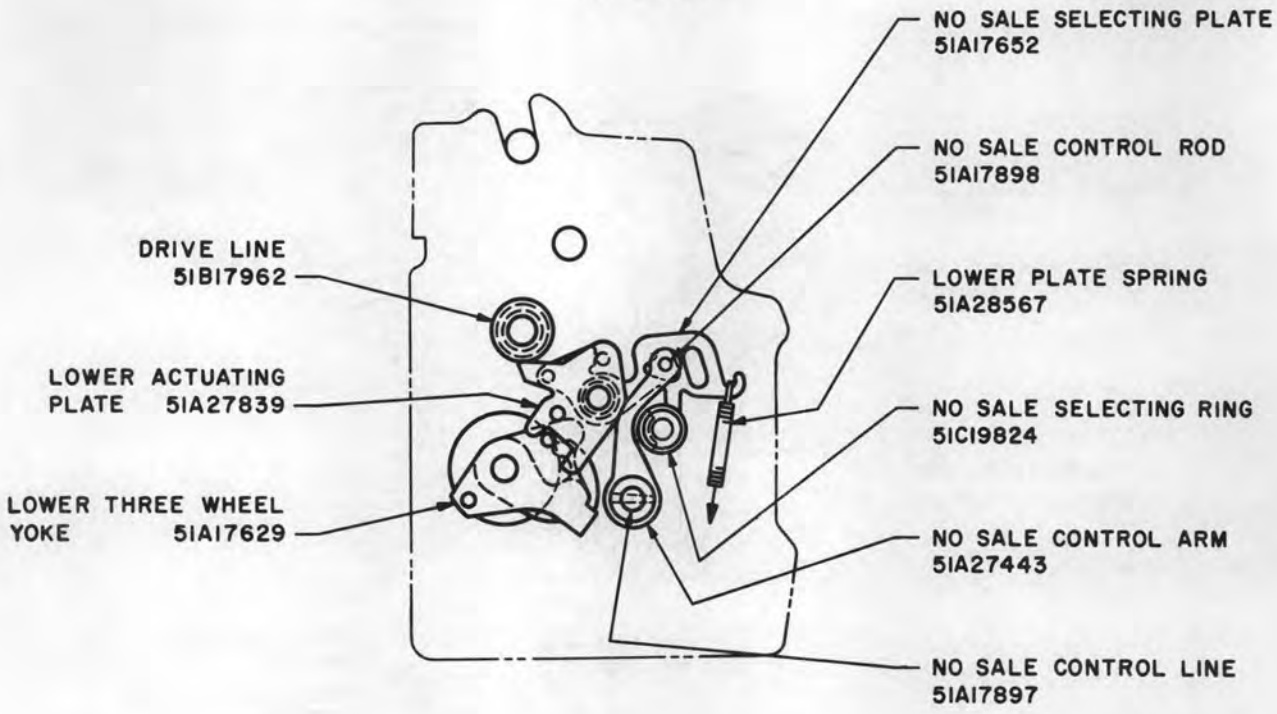


NO-SALE COUNTER

The No-Sale Counter is advanced on the first Change-Balance Due operation immediately following a previous Change-Balance Due, and on every consecutive Change-Balance Due following.

The No-Sale Control Arm 51A17895, which is pinned to the No-Sale Control Line yokes the stud in the Row 2 Control Arm. When the Reset Segment is fed to reset the Item Counter, the Row 2 Control Arm is moved top to the front, moving the No Sale Control Arm top to the back.

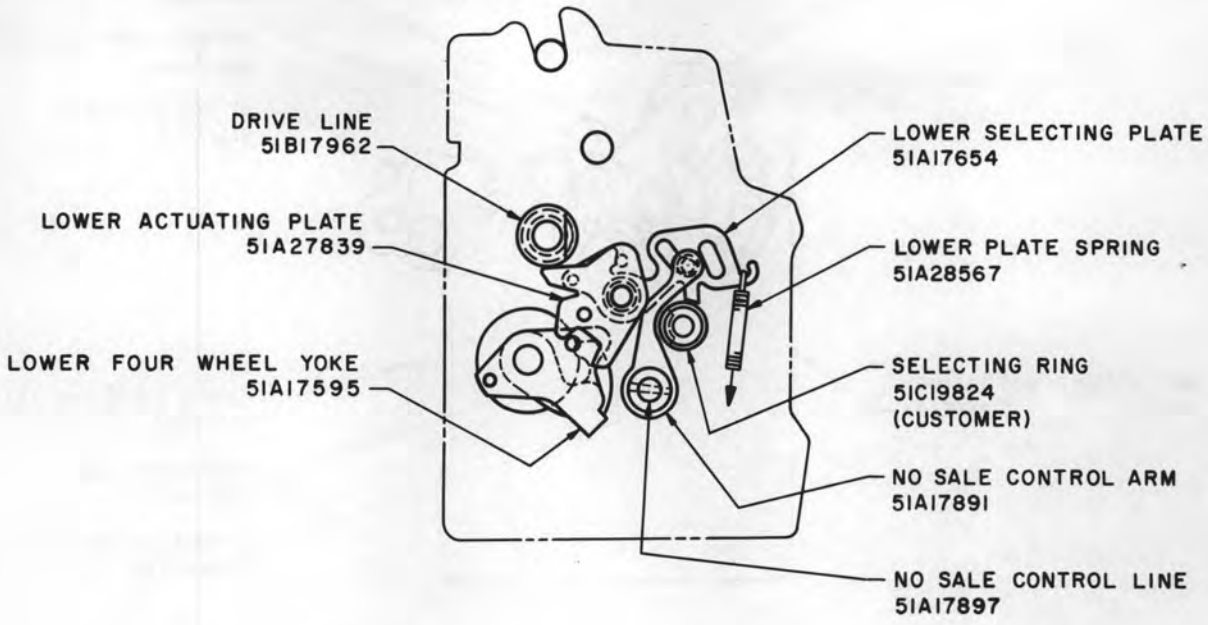
ABLING NO SALE COUNTER ON CHANGE-BALANCE DUE (C-52)



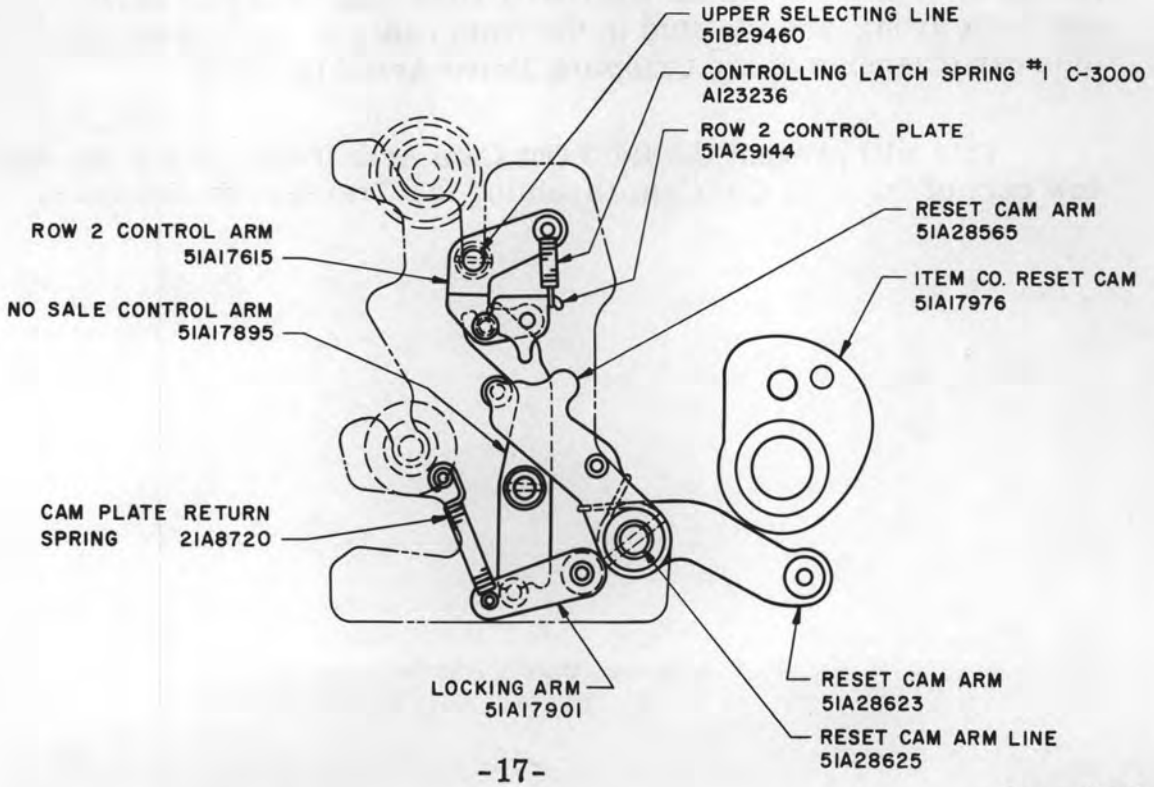
The No-Sale Control Arm 51A17891, which is pinned to the line, has a Stud in the upper end that works in the Camming Raceway in the Customer Counter Lower Selecting Plate. As the Arm is moved top to the back, the Stud cams the Selecting Plate up to disable it. At the same time, the No Sale Control Arms 51A27043, which are pinned to the No-Sale Control Line, are moved top to the back. Assembled to the top and between these Arms is the No-Sale Control Rod. This Rod is Assembled through the Camming Raceway in the No-Sale Counter lower Selecting Plate. When the No-Sale Control Line is moved top to the back, the No-Sale Control Rid will allow the No-Sale Counter Lower Selecting Plate to move down to the abled position.

As the Lower Crippling Shaft is moved down to allow the selecting plates to sense, the No Sale Counter Selecting Plate will feel for the high and low surfaces of the No Sale Selecting Ring 51C19824. On this operation the No Sale Selecting Ring will have a low surface under the "tail" of the No Sale Counter Selecting Plate 51A17652. Between 1-1/2 and 1-3/4 turns of the handle, the Drive Line will be moved toe to the front. This will advance the No Sale Counter in the same manner as previously explained in the Customer Counter explanation of this section.

DISABLING CUSTOMER COUNTER ON CHANGE-BALANCE DUE OPERATION (C-52)

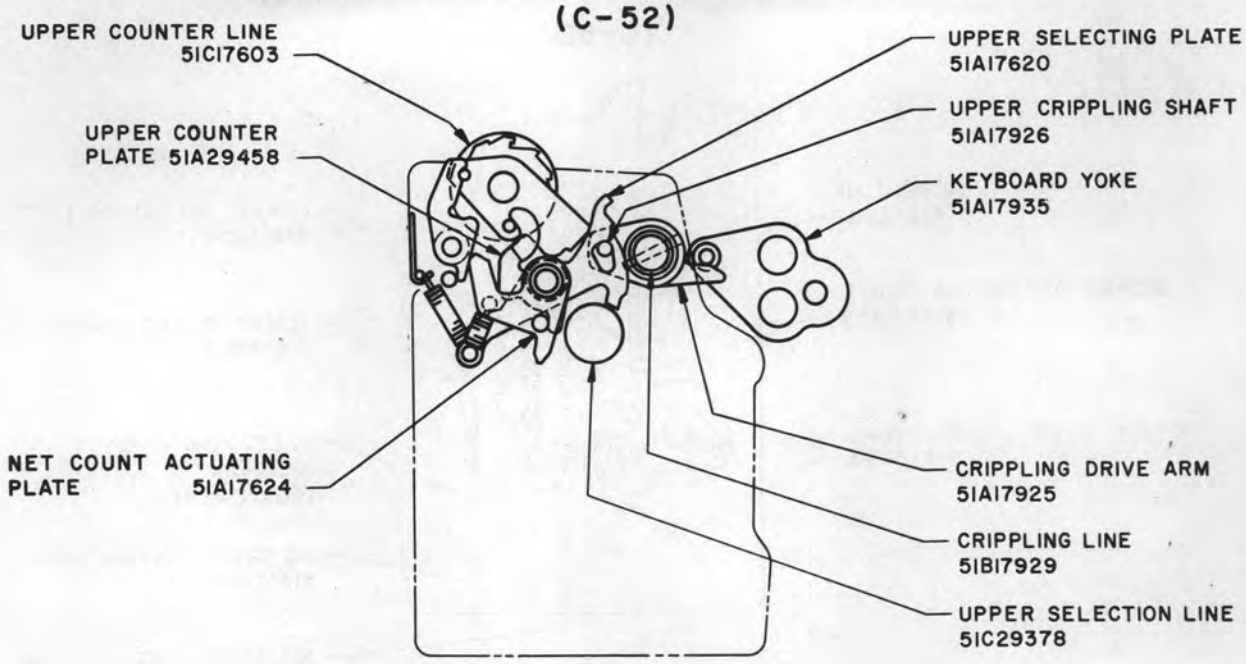


Whenever the first Row 2 or Grocery Motor Bar operation is made, the Upper Selecting Line will be moved top to the back. The Row 2 Control Arm will move the No Sale Control Arm and No Sale Control Line top to the front. The No Sale Control Arm 51A17891 will move the Customer Counter Selecting Plate down to allow it to sense, and the No Sale Control Rod will raise the No Sale Selecting Plate to disable the selection of the No Sale Counter.



SPECIAL COUNTER CRIPPLING U.L.L. OUT OF REGISTER

(C-52)



SPECIAL COUNTER DISABLING

UNIT LOCK LEVER OUT OF REGISTER

When the Unit Lock Lever is moved out of the register position in either direction, the Zero Stop Yoke Arm, which is swung on the inside of the left Side frame and has a stud in the raceway of the Unit Lock Lever, will be moved top to the back. The Arm pinned to the left end of the Keyboard Yoke 51A17933 will move top to the front, and the stud in the front end will move down on the rear extension of the Crippling Drive Arm 51A17925.

This will prevent the Hold Out Cam Arm from moving into the low part of the Hold Out Cam Disabling the Transaction Counters.

RESETTING SPECIAL COUNTERS

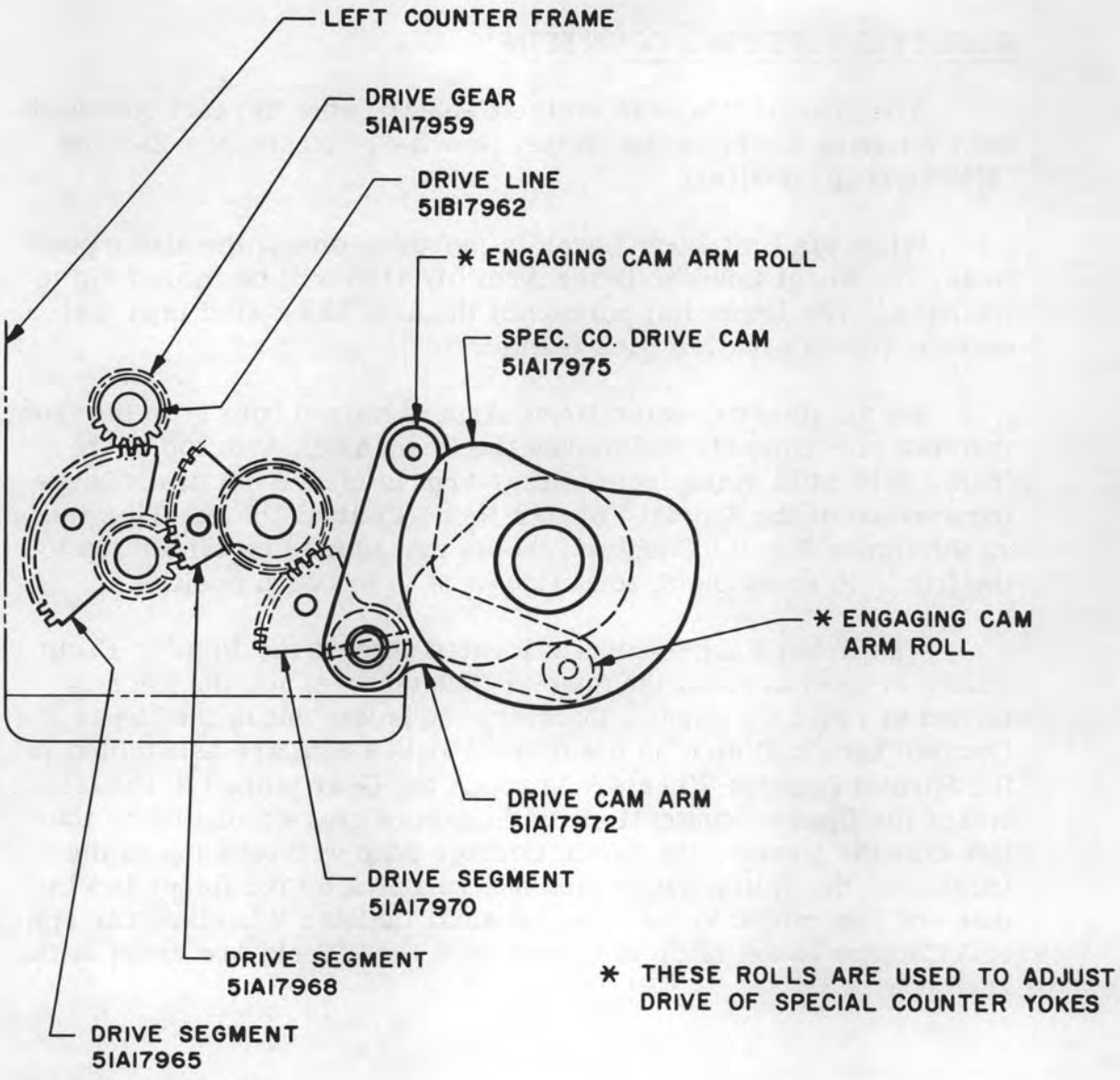
The Special Counters on the C-52 are able to reset only with the Unit Lock Lever in the "Reset Row 2-", "Reset Row 2+", or "Read Group" position.

When the Unit Lock Lever is moved to one of the above positions, the Reset Counter Drive Arm 51A4156 will be moved top to the back. The lower left portion of the arm has a stud in it that extends through the left side frame.

As the Reset Counter Drive Arm is moved bottom to the front, the stud in it contacts and moves the Reset Lock Arm top to the front. The Stud in the front of this Arm is moved out of the locking surface of the Special Counter Reset Control Plate. This frees up the Upper Special Counter Line so that is may be turned top to the front, to reset the Special Counters to the zero position.

The Reset Knob, which is located outside the Printer Front Plate, is used to reset the Special Counters. When the Knob is turned to reset the Special Counter, the spline cut in the Upper Counter Line will pick up the Reset Pawls which are assembled in the Special Counter Wheels. Through the Gear pinned to the left end of the Upper Counter Line and chain of gears mounted on the left Counter Frame, the lower Counter Line will turn top to the front, and the spline cut in this line will pick up the Reset Pawls that are assembled in the lower Special Counter Wheels. The Special Counter Reset Knob is turned until the Wheels are reset to the zero position.

SPECIAL COUNTER DRIVE
(C-52)



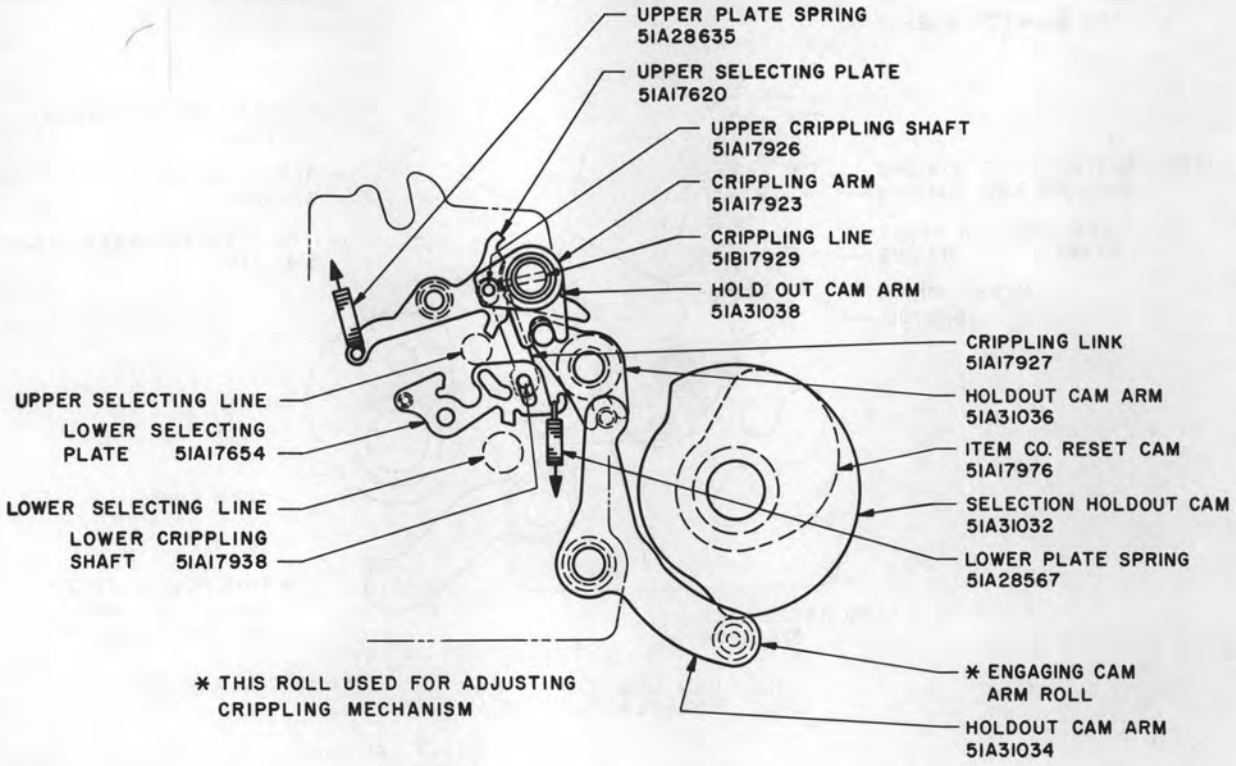
ADJUSTMENTS

The Special Counter Yokes should be carried up in the back far enough to allow the Retaining Pawl to get safely into the next tooth of the Special Counter Wheel with a slight amount of lead. The amount of carry to these Yokes is determined by the rolls on the Drive Cam Arm 51A17972.

The following Rolls are used to make this adjustment:

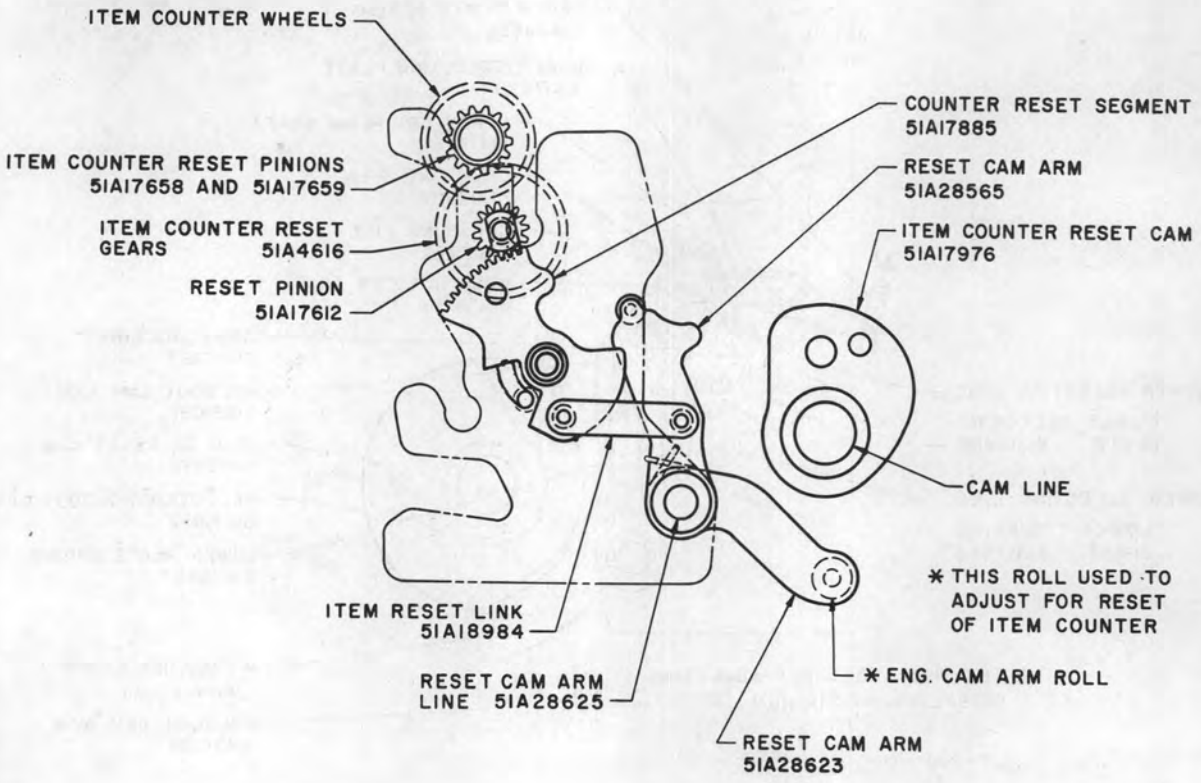
Page No.	Description	Size
1900A83033	Ribbon Feed Roll #1	.375 (Standard)
51A8210	Engaging Cam Arm Roll	.370
51A209	Engaging Cam Arm Roll	.360
51A8211	Engaging Cam Arm Roll	.380
51A8109	Engaging Cam Arm Roll	.390

SPECIAL CO. CRIPPLING U.L.L. IN REGISTER (C-52)


UPPER PLATE SPRING 51A28635
UPPER SELECTING PLATE 51AI7620
UPPER CRIPPLING SHAFT 51AI7926
CRIPPLING ARM 51AI7923
CRIPPLING LINE 51BI7929
HOLD OUT CAM ARM 51A31038
CRIPPLING LINK 51AI7927
HOLDOUT CAM ARM 51A31036
ITEM CO. RESET CAM 51AI7976
SELECTION HOLDOUT CAM 51A31032
LOWER PLATE SPRING 51A28567
UPPER SELECTING LINE
LOWER SELECTING PLATE 51AI7654
LOWER SELECTING LINE
LOWER CRIPPLING SHAFT 51AI7938
* THIS ROLL USED FOR ADJUSTING CRIPPLING MECHANISM
* ENGAGING CAM ARM ROLL
HOLDOUT CAM ARM 51A31034

The Selecting Plates for the Special Counters should be held by the Upper and Lower Crippling Shafts above the Selecting Lines with clearance, to allow the Selecting Lines to position without any interference from the Plates. In order to obtain this, the roll on the Holdout Cam Arm is used. The above Rolls that were used to adjust the carry of the Special Counter Yokes will also be used to make the adjustment.

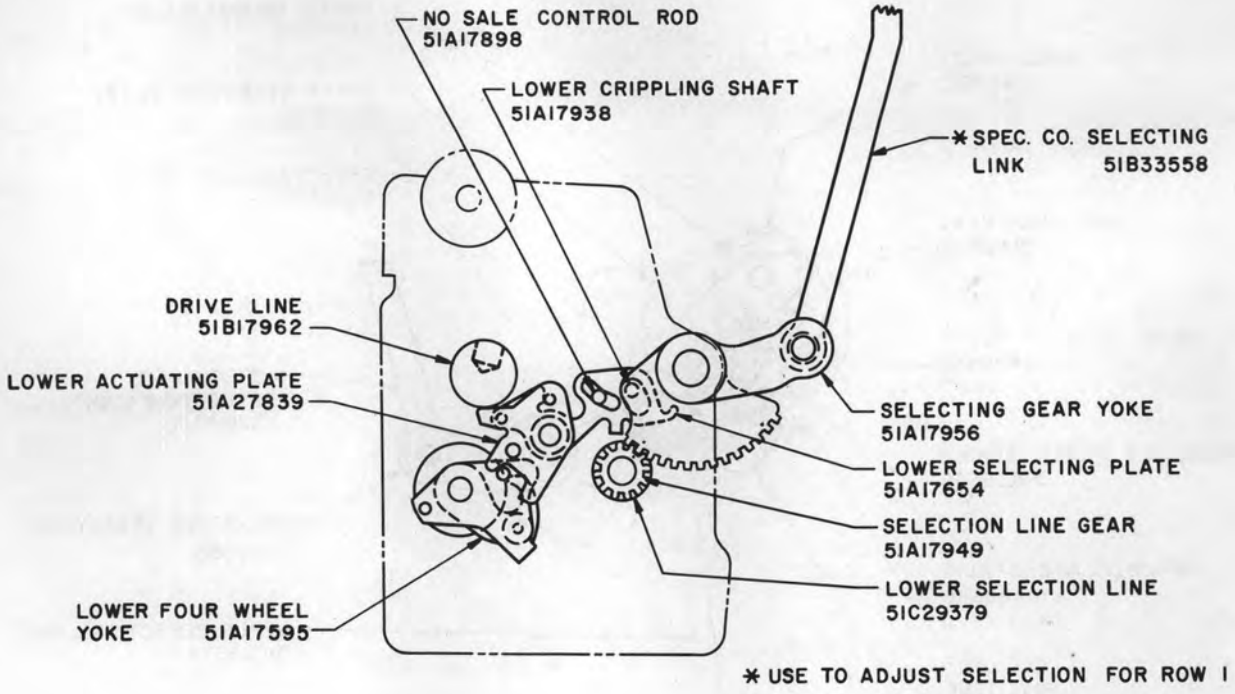
RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51A17658 AND 51A17659
ITEM COUNTER RESET GEARS 51A4616
RESET PINION 51A17612
COUNTER RESET SEGMENT 51A17885
RESET CAM ARM 51A28565
ITEM COUNTER RESET CAM 51A17976
CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51A18984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

The resetting of the Item Counter should be adjusted so that both Item Counter Wheels are reset to zero position with a slight amount of lead to enable the Retaining Pawls to retain the Wheels. In order to obtain this, the Roll on the Item Counter Reset Cam Arm is used. Use one of the Rolls that were mentioned in the adjustment for the drive of the Special Counter Yokes.

ROW I SPECIAL CO. SELECTION

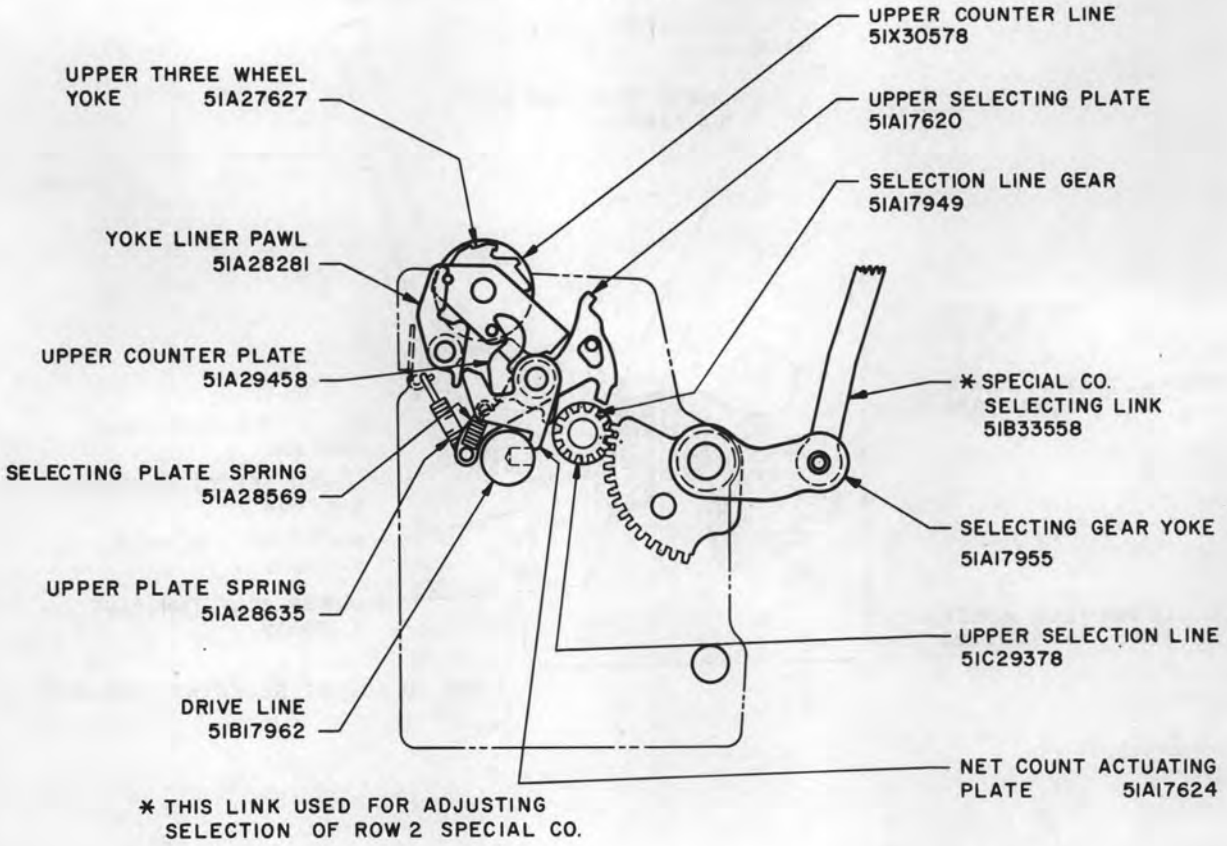
(C-52)



The Special Counter Selection is determined by the position of the Upper and Lower Selecting Lines. These Lines are positioned by the Indicator Segments for Row 1 and Row 2, through the Special Counter Selecting Links and Selecting Gear Yokes. The following Special Counter Selecting Links are used to adjust the selection of the Special Counters:

Page No.	Description	Size
51X33548	Special Counter Selecting Link #1	4.088
51X33549	Special Counter Selecting Link #2	4.099
51X19007	Special Counter Selecting Link #3	4.110 (Standard)
51X33550	Special Counter Selecting Link #4	4.121
51X33551	Special Counter Selecting Link #5	4.132

ROW 2 SPECIAL CO. SELECTION
(C-52)



Page No.

51X33540	Special Counter Selecting Link A	4.088
51X33541	Special Counter Selecting Link B	4.099
51X28269	Special Counter Selecting Link C	4.110 (Standard)
51X33542	Special Counter Selecting Link D	4.121
51X33543	Special Counter Selecting Link E	4.132

The above Links are used to adjust the selection for Row 2 Special Counters, and this link has a Stud in both ends.

To test the above adjustments to see if the correct length of Special Counter Link has been used, operate machine and allow both Row 1 and Row 2 Latch to go to the 11th position. Complete the operation and see if the marks in the Hubs for the Selection Lines in the Right Counter Frames line up with the marks on the Hubs of the Selection Ring for the Item Counter and Customer Counter. If these marks are in line, the correct length Link has been used.

CHANGING FROM ROW 2 ITEM COUNT

In some instances it may be desired to change the Special Counter from Net Count to Item Count. This change has been made very simple by the forethought of the design of the Special Counter Unit.

In order to make this change, all that is necessary is to install the Item Counter Stud 51A33559 in the Special Counter Yoke for the Special Counter where Item Count is desired.

There is a hole in the Yoke provided for the Stud. Simply by installing the Stud in the hole and installing the Stud Clip 97A12147 to retain it, the Counter is changed from Net Count to Item Count. This enables the Actuating Plate to feed and restore the Yoke on the same operation.

When the Drive Line is moved to the front between 1-1/2 and 1-3/4 turns of the handle, the Actuating Plate will move up against the Stud in the Special Counter Yoke and move it top to the front, advancing the Unit Wheel. At the same time the stud will contact the Counter Plate and move it top to the back. Slightly past 1-3/4 turns of the handle, the Drive Line will move top to the back, and at this time the dwell in the line will restore the Actuating Plate top to the front. The Item Counter Stud in the Plate will contact the lower portion of the Counter Plate and move it top to the front. It will move down on the stud in the Special Counter Yoke and restore it, where, when selected, it will again advance the Counter.

DETAIL PRINTER

SECTION "M"

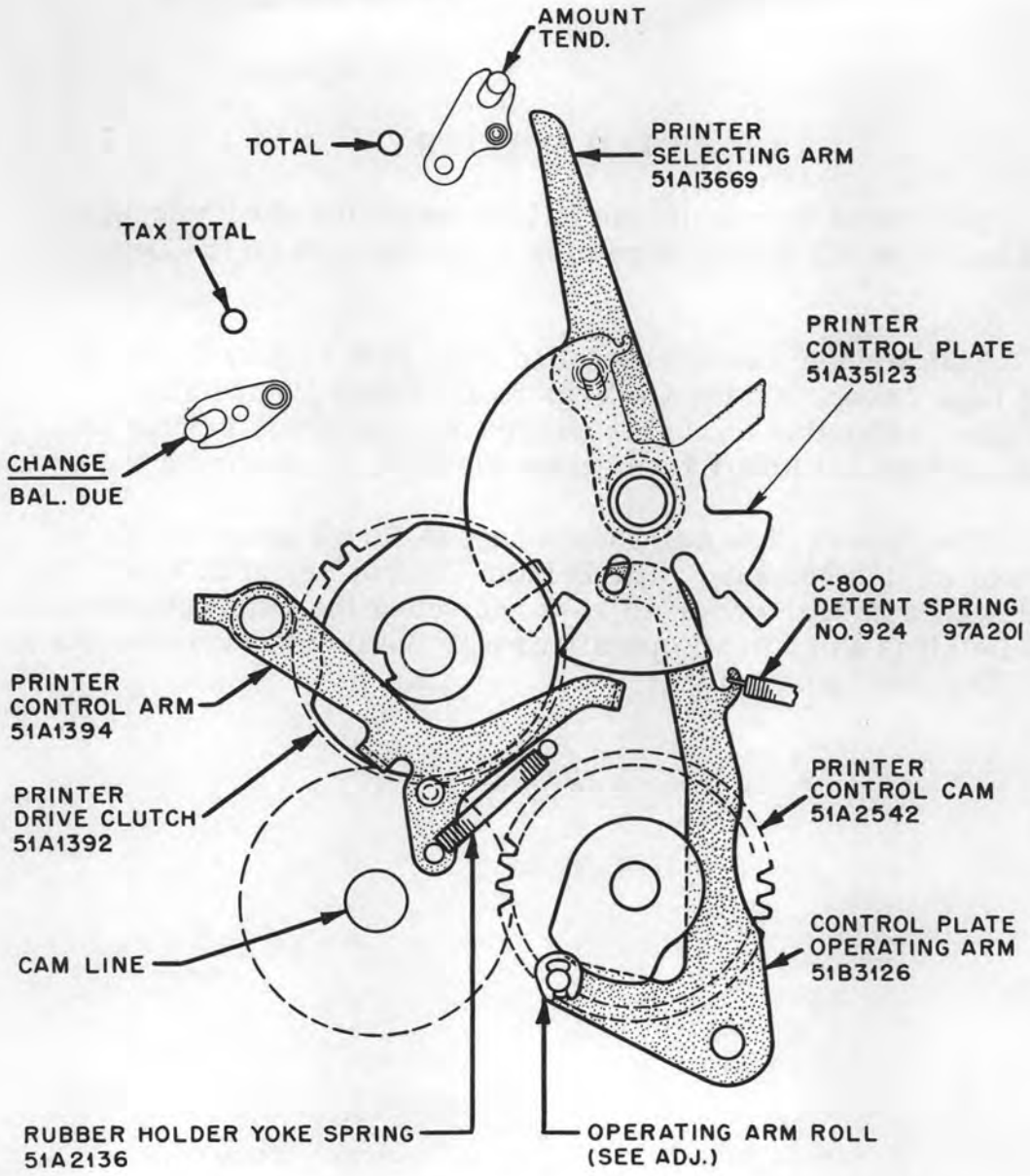
DETAIL PRINTER

The Detail Printer on the C-52 is constructed with squeeze impression which gives a very clear, legible print on the Detail Strip.

This Printer can be controlled from Row 1, Row 2, and the Unit Lock Lever. On the C-52-10 Total Change Computation Machine, which this manual is written on, the Detail Printer is selected from all Row 1 keys except the Grocery Motor Bar.

The Refund, Tax and Coupon keys in Row 2 select the Detail Printer on this machine. The Printer Control Detent in Row 2 can be designed so that any or all keys can select the Detail Printer. The Detail is abled in all operations with the Unit Lock Lever out of the "Register" position.

DETAIL PRINTER
(C-52)



Selection

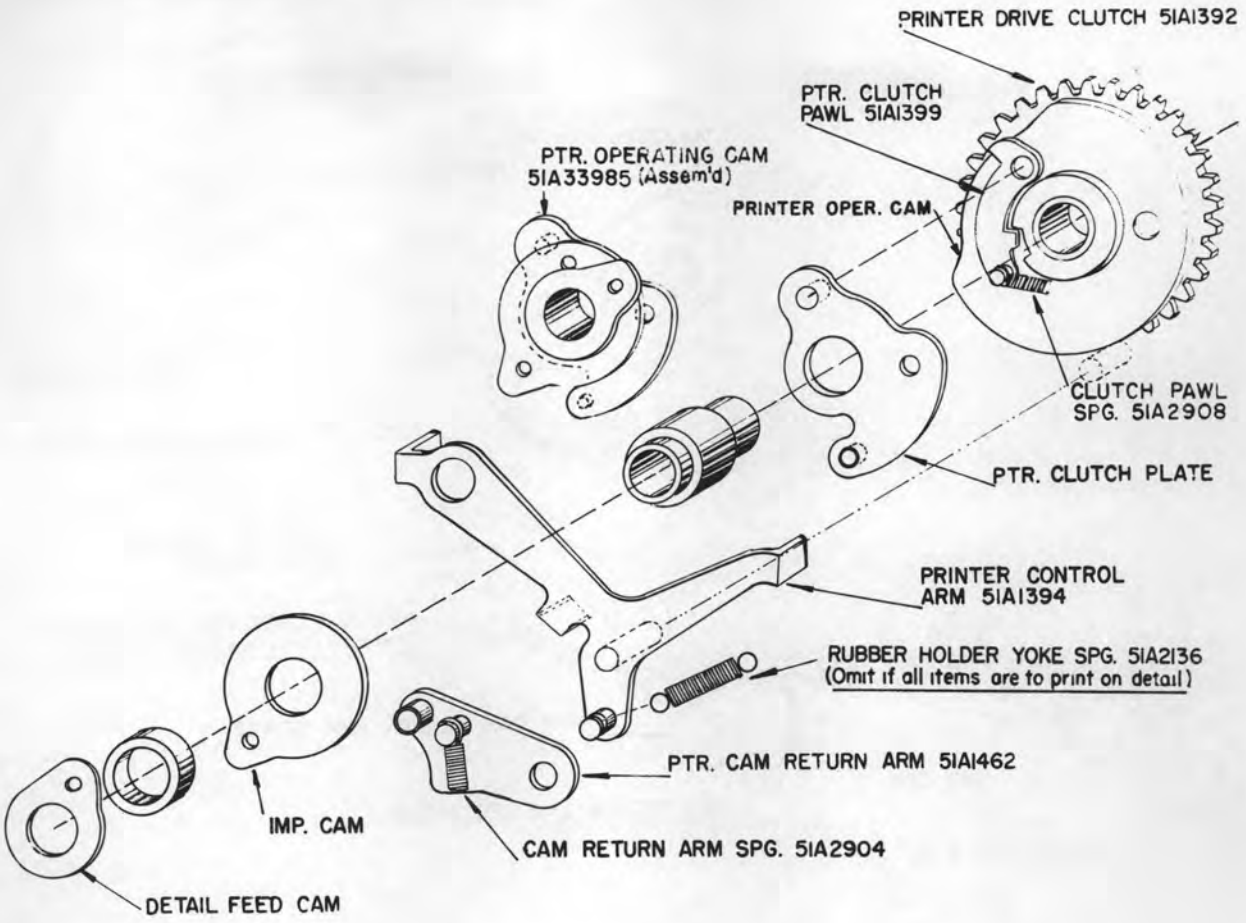
After 1/8 turn of the handle, the Printer Control Cam moves away from the roll on the Control Plate Operating Arm. The spring on this arm moves it top to the back. The upper stud in the arm moves the Printer Control Plate top to the front. The stud in the Printer Selecting Arm being yoked by an elongated opening in the Printer Control Plate causes the Printer Selecting Arm to move top to the front.

On an Item operation, the Printer Selecting Arm is allowed to move down until it is stopped by the stud in the Printer Selecting Stop Arm which is operated by the Key Pin in the Change-Balance Due key stem.

A low portion of the Printer Control Plate will be positioned in the path of the back turned over extension of the Printer Control Arm.

PRINTER CLUTCH ASSEMBLY

(C-52)


PRINTER DRIVE CLUTCH 51A1392
PTR. CLUTCH PAWL 51A1399
PTR. OPERATING CAM 51A33985 (Assem'd)
PRINTER OPER. CAM
CLUTCH PAWL SPG. 51A2908
PTR. CLUTCH PLATE
PRINTER CONTROL ARM 51A1394
RUBBER HOLDER YOKE SPG. 51A2136 (Omit if all items are to print on detail)
PTR. CAM RETURN ARM 51A1462
IMP. CAM
CAM RETURN ARM SPG. 51A2904
DETAIL FEED CAM

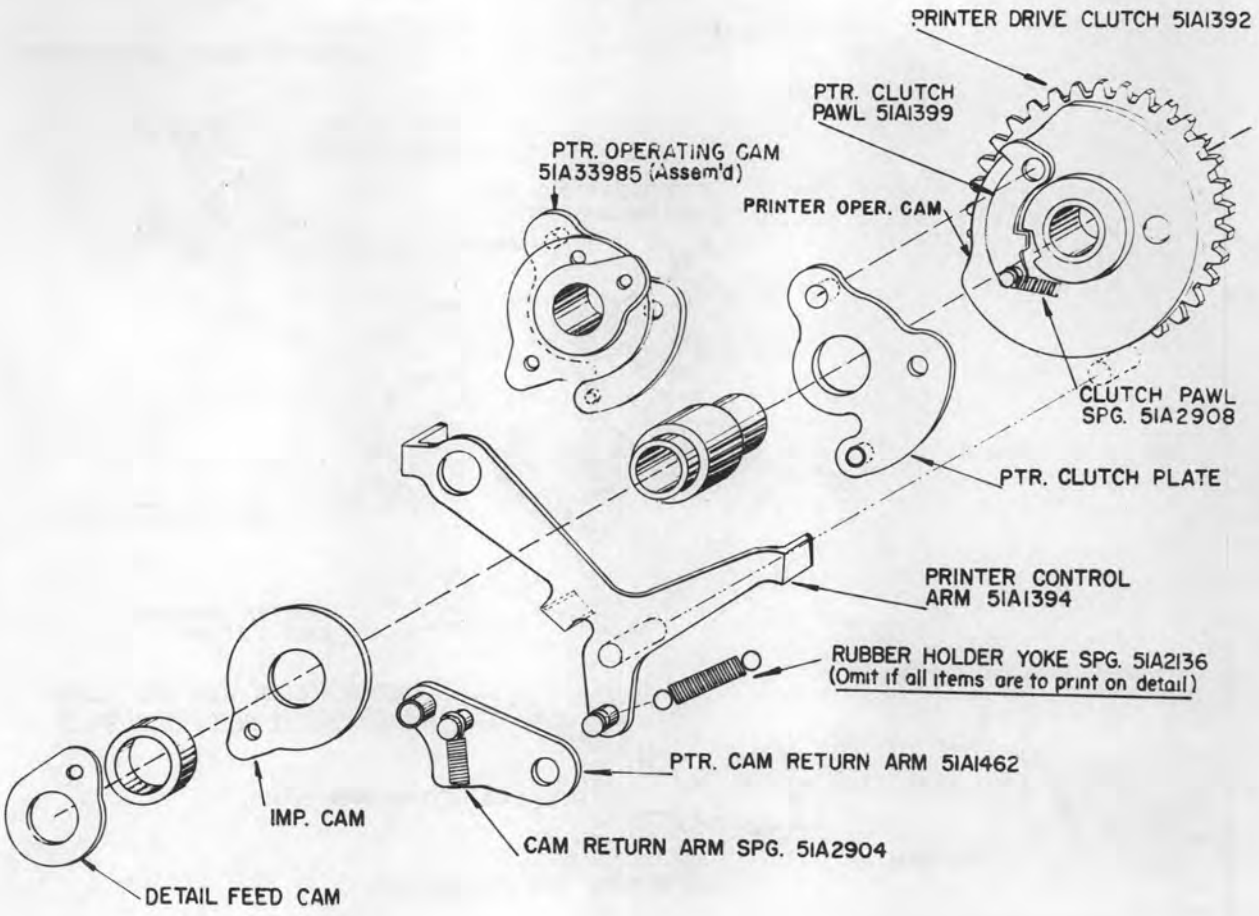
At 3/8 turns of the handle, the high portion of the Printer Drive Clutch moves away from the roll on the lower part of the Printer Control Arm. The spring on this arm will cause it to move up into the low part of the Printer Control Plate. The lower portion of the Printer Control Arm is moved up into the path of the "tail" of the Printer Clutch Pawl.

The Printer Clutch Pawl, which is swung on the Printer Operating Cam, is held into the dwell of the Printer Drive Clutch by its spring and as the Printer Drive Clutch is turned top to the front, the Cam Assembly will be turned in the same direction.

About 5/8 turn of the handle, the "tail" of the Clutch Pawl will contact the lower turned over extension of the Printer Control Arm. This will cause the Clutch Pawl to rock top to the back and move the "nose" of the pawl out of the dwell in the Printer Drive Clutch, breaking the bond between the Clutch and Cams. Since the Cams receive no further movement, the Detail Printer will be disabled.

PRINTER CLUTCH ASSEMBLY

(C-52)


PRINTER DRIVE CLUTCH 51A1392
PTR. CLUTCH PAWL 51A1399
PTR. OPERATING CAM 51A33985 (Assem'd)
PRINTER OPER. CAM
CLUTCH PAWL SPG. 51A2908
PTR. CLUTCH PLATE
PRINTER CONTROL ARM 51A1394
RUBBER HOLDER YOKE SPG. 51A2136 (Omit if all items are to print on detail)
PTR. CAM RETURN ARM 51A1462
IMP. CAM
CAM RETURN ARM SPG. 51A2904
DETAIL FEED CAM

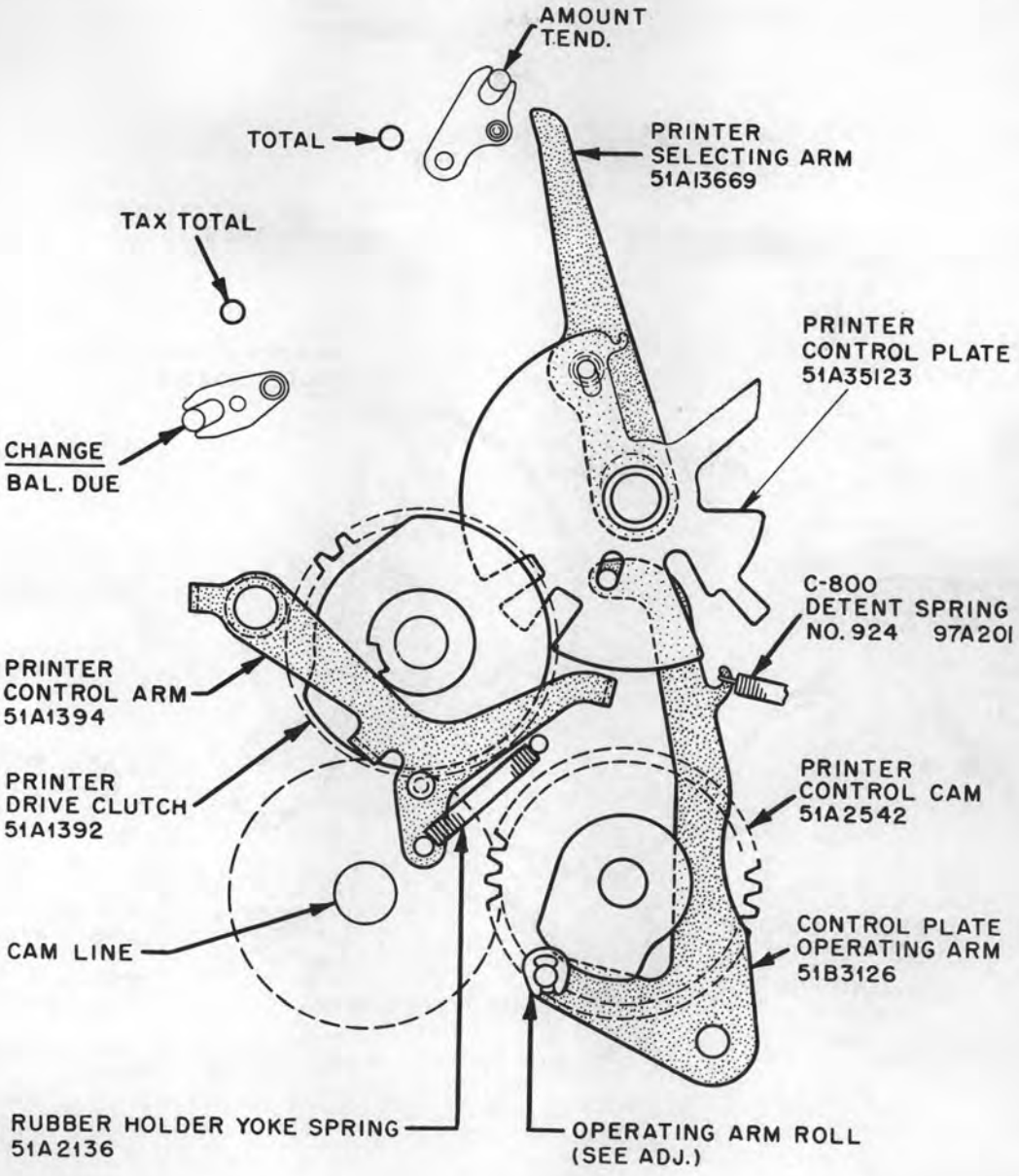
As the bond between the Clutch and Cams is broken, the roll on the front end of the Printer Cam Return Arm being against the Impression Cam will move the Cam will move the Cam Assembly bottom to the front. This will move the "tail" of the Clutch Pawl away from the extension of the Printer Control Arm.

At 7/8 turn of the handle, the high portion of the Printer Drive Clutch will move the back turned over extension out of the low portion of the Printer Control Plate. The Control Plate Operating Arm will move top to the front moving the Printer Control Plate and Printer Selecting Arm top to the back to their own position.

Amount Tendered

As the Amount Tendered Key is depressed, the key pin will move the Printer Selecting Stop Arm top to the back. The stud in this arm will move down into the path of the Printer Selecting Arm and stop it in a position corresponding to the 9th position of the Transaction Key Bank.

The Printer Control Plate will be stopped so that a high surface of the Plate will be positioned over the Printer Control Arm.

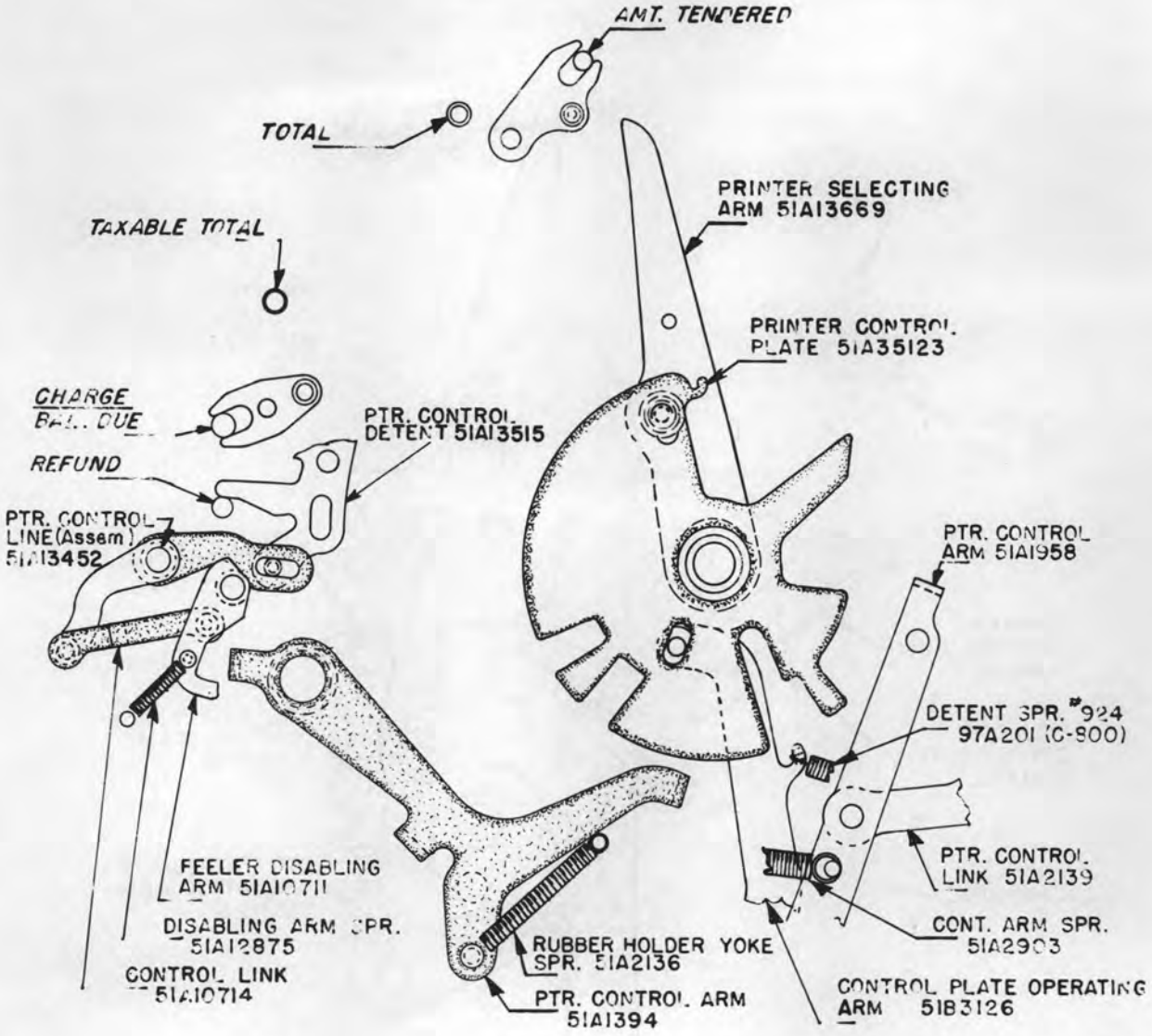


At 3/8 turn of the handle, the high part of the Printer Drive Clutch moves away from the roll on the lower part of the Printer Control Arm and spring tension on this arm will cause the back turned over extension to move up until it is stopped by the high surface of the Printer Control Plate. This prevents the front turned over extension of the Printer Control Arm from moving into the path of the "tail" of the Printer Clutch Pawl.

The bond between the Printer Drive Clutch and the Printer Operating Cam is not broken. The Feed and Print of the Detail is now abled.

Total-Taxable Total And Change Balance Due

On the above operation, the Detail Printer is selected to print and feed the same as on an Amount Tendered Operation. The difference in selection is that the Printer Selecting Arm is stopped in different positions. The Printer Control Plate has high surface in the path of the Printer Control Arm in each of these positions. Therefore, the bond between the Printer Drive Clutch and Printer Operating Arm is not broken on any of these operations.



Row 2 Selection

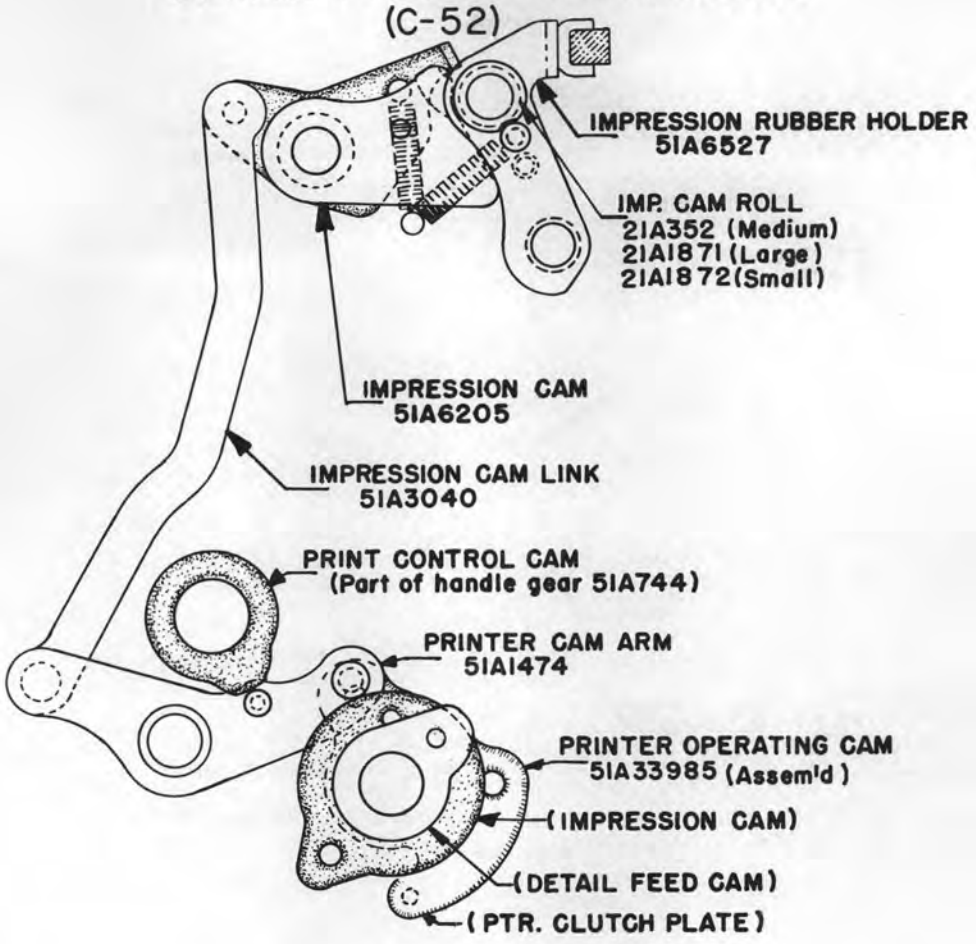
As was previously mentioned, the Refund, Tax and Coupon Keys in Row 2 select the Detent Printer to feed and print. It is possible that all keys in Row 2 may select the Detail Printer.

When one of the above mentioned keys is depressed, the key pin contacts the Printer Control Detent and cams it down. The lower portion of the Detent is assembled to the Printer Control Line and will move it top to the front.

The Printer Control Arm 51A13454, which is pinned to the right end of the line, is assembled to the Printer Control Link 51A10714 and will move it to the back. The Feeler Disabling Arm is moved bottom to the back and the lower extension is moved under the front turned over extension of the Printer Control Arm.

This prevents the Printer Control Arm from moving top to the back into the path of the "tail" of the Printer Clutch Pawl. This ables the Detail Printer to print and feed.

DETAIL PRINTER-IMPRESSION
(C-52)



Detail Impression

When the Detail is able to print, the Printer Operating Cams are bonded to the Printer Drive Clutch and are turned top to the front.

At 1-1/4 turn of the handle, the high portion of the Impression Cam will move under the Printer Cam Arm and move it top to the front. The Impression Cam Link is moved down, moving the Impression Cam 51A6205 top to the front. The high part of the Impression Cam will come against the Impression Cam Roll and move the Impression Rubber Holder top to the back against the Detail Paper, Ribbon and Type Wheels to make the impression.

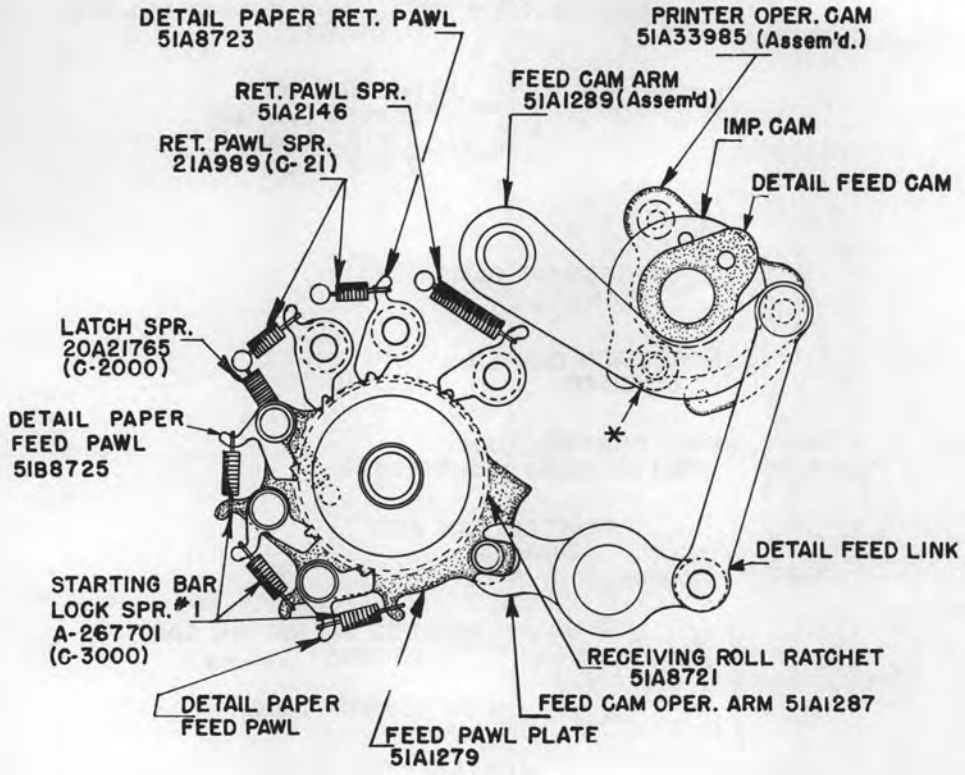
As the high part of the Impression Cam moves away from the roll of the Printer Cam Arm, the spring on the Impression Cam will restore it and allow the Impression Rubber Holder to be moved top to the front.

Just before two turns of the handle, a high part of the Cam on the Handle Drive Gear moves over the stud in the Printer Cam Arm. This insures that the Cam Arm and Impression Cam 51A6205 are fully restored.

When the Impression Cam 51A6025 is fully restored, the back projection on the Cam moves down over the raised portion of the Impression Rubber Holder and locks it top to the front away from the type.

DETAIL PRINTER-FEED

(C-52)



Detail Feed

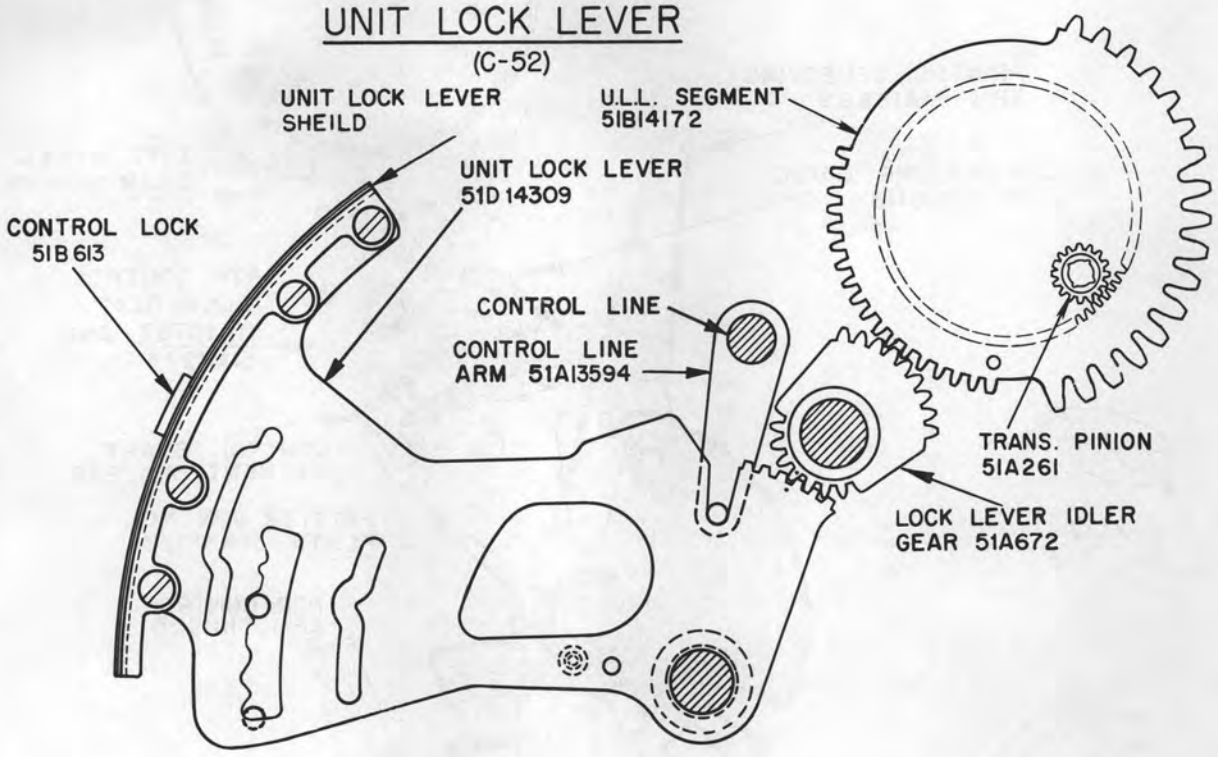
Between 1 and 1-1/8 turn of the handle, the high portion of the Detail Feed Cam moves the Feed Cam Arm down in the back. The Detail Feed Link is moved down turning the Feed Cam Operating Arm top to the back. This Arm yokes a stud in the Feed Pawl Plate and moves it top to the front.

There are three Detail Paper Feed Pawls assembled to the Plate and one of these Pawls will move the Receiving Roll Ratchet top to the front to space the Detent.

As the high portion of the Detail Feed Cam moves away from the roll on the Feed Cam Arm, the C-2000 Latch Spring will move the Feed Pawl Plate top to the back cocking the Detail. The Reveiving Roll Ratchet will be retained in position by one of the three Detail Paper Retaining Pawls which are mounted on studs in the right side frame.

UNIT LOCK LEVER

(C-52)

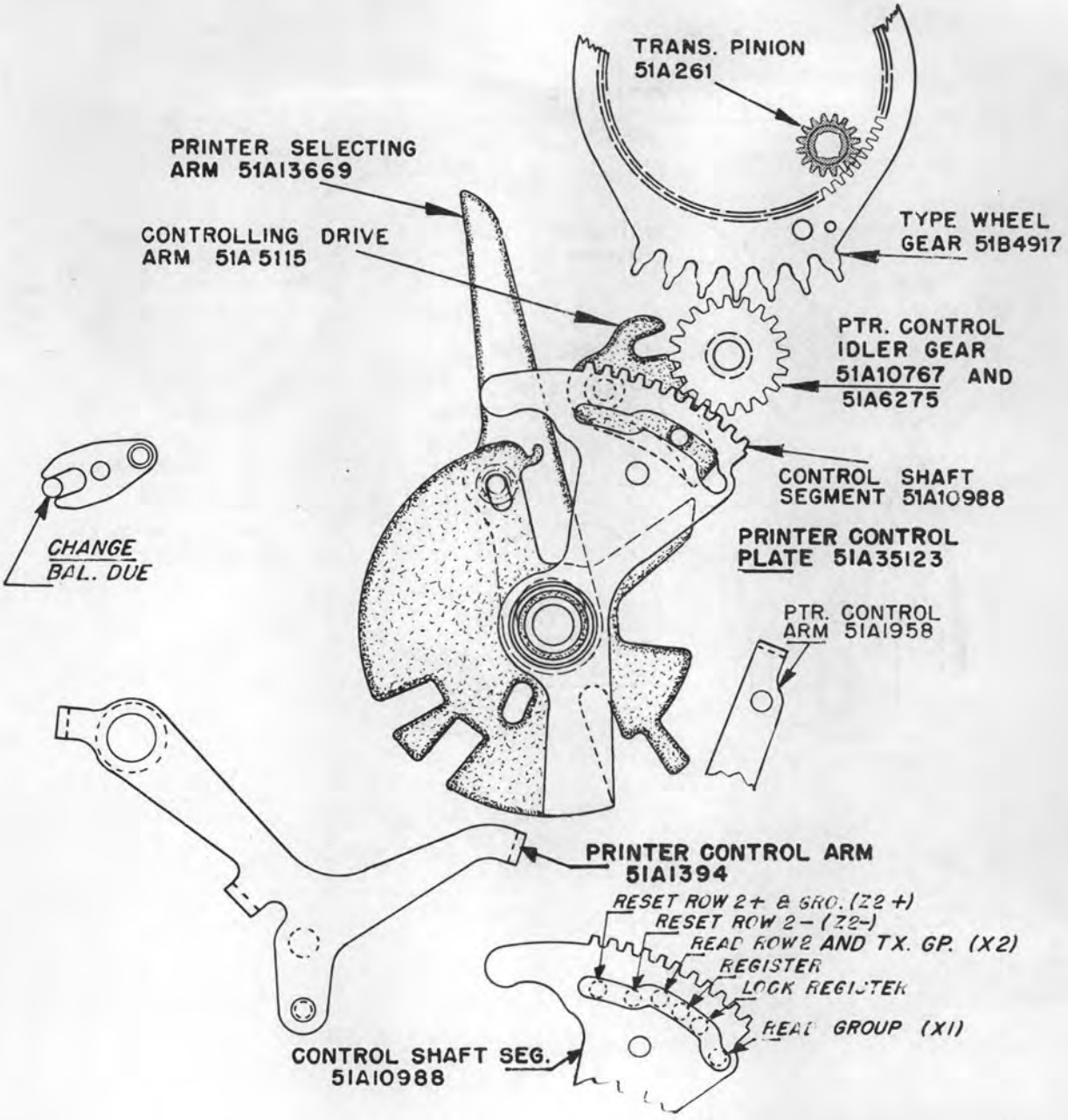


Unit Lock Lever Selection

When the Unit Lock Lever is moved to the "Read Group" position, the Lock Line Idler Gear is turned top to the front. The Unit Lock Lever Segment, which is assembled to the Transmission Assembly, is meshed with the Idler Gear and is turned top to the back.

Through the Transmission to the Detail, the Type Wheel Gear is turned top to the back. The Printer Control Idler Gear, 51A10767, is meshed with the Type Wheel Gear and is cut to fit the hub of the Printer Control Idler Gear. 51A6275.

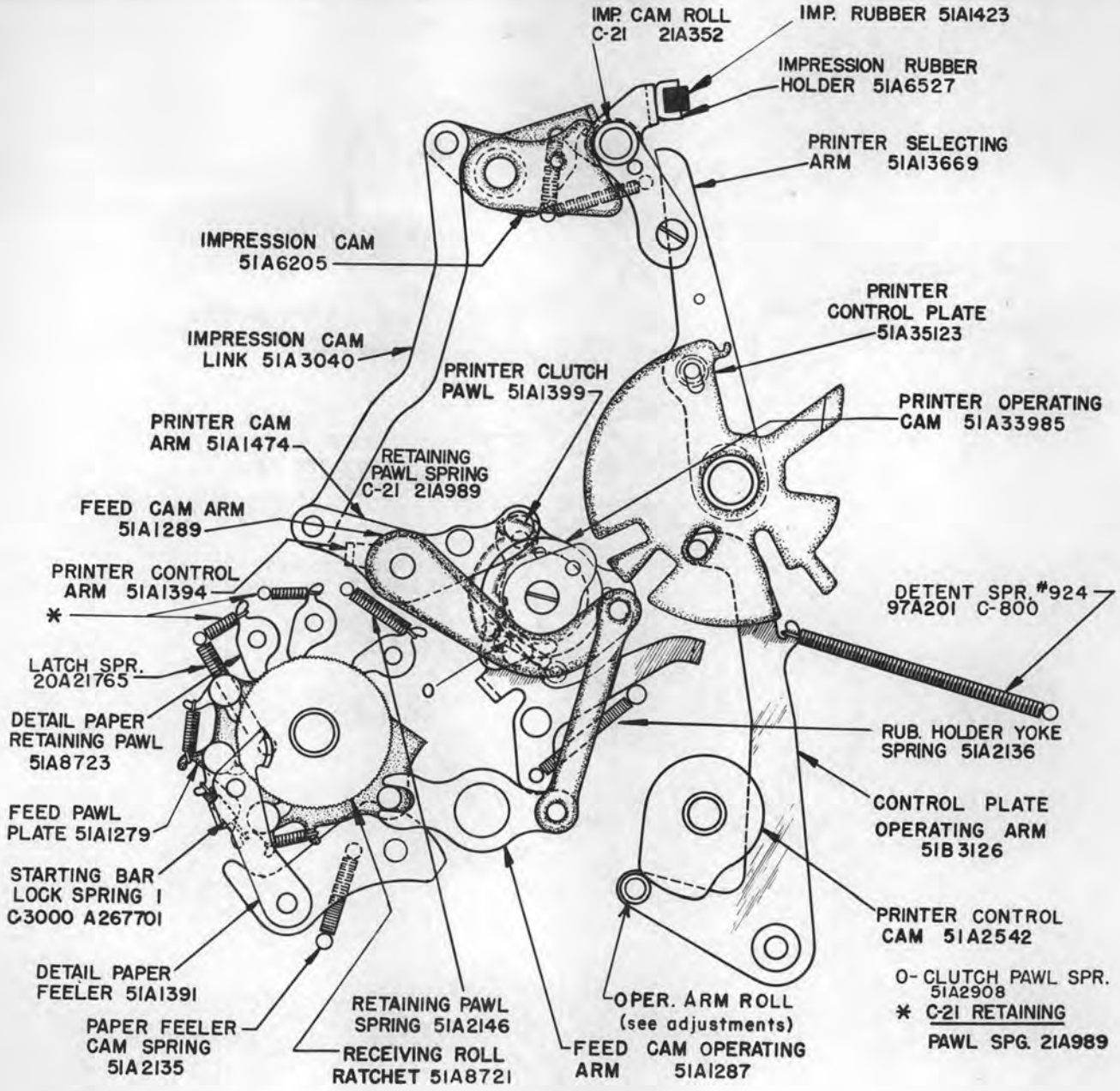
The latter Idler Gear is meshed with the Control Shaft Segment 51A31443, and will move it top to the front. The lower portion of the Segment is moved to the back away from the turned over extension of the Printer Control Arm.



On a "Read Group" Operation, the Total Key in Row 1 is used to release the machine. The Printer Control Plate is positioned as to place a high surface over the turned over extension of the Printer Control Arm. Therefore, on this operation, the Detail Printer is selected to print and feed.

When the Unit Lock Lever is positioned to "Read Row 2" position, the Control Shaft Segment is moved top to the back, the lower portion is moved over the turned over extension of the Printer Control Arm selecting Detail Printer to print and feed.

If Unit Lock Lever is moved to either the "Reset Row 2 +" or "Reset Row 2-", the Control Shaft Segment is moved further top to the back and the lower portion to the front. In these positions, the lower portion is still in the path of the Printer Control Arm selecting the Detail Printer to print and feed.


IMP. CAM ROLL C-21 21A352
IMP. RUBBER 51A1423
IMPRESSION RUBBER HOLDER 51A6527
PRINTER SELECTING ARM 51A13669
IMPRESSION CAM 51A6205
PRINTER CONTROL PLATE 51A35123
IMPRESSION CAM LINK 51A3040
PRINTER CLUTCH PAWL 51A1399
PRINTER OPERATING CAM 51A33985
PRINTER CAM ARM 51A1474
RETAINING PAWL SPRING C-21 21A989
FEED CAM ARM 51A1289
PRINTER CONTROL ARM 51A1394
*
DETENT SPR. #924 97A201 C-800
LATCH SPR. 20A21765
DETAIL PAPER RETAINING PAWL 51A8723
RUB. HOLDER YOKE SPRING 51A2136
CONTROL PLATE OPERATING ARM 51B3126
FEED PAWL PLATE 51A1279
STARTING BAR LOCK SPRING 1 C3000 A267701
PRINTER CONTROL CAM 51A2542
O- CLUTCH PAWL SPR. 51A2908
* C-21 RETAINING PAWL SPG. 21A989
DETAIL PAPER FEELER 51A1391
PAPER FEELER CAM SPRING 51A2135
RETAINING PAWL SPRING 51A2146
RECEIVING ROLL RATCHET 51A8721
OPER. ARM ROLL (see adjustments)
FEED CAM OPERATING ARM 51A1287

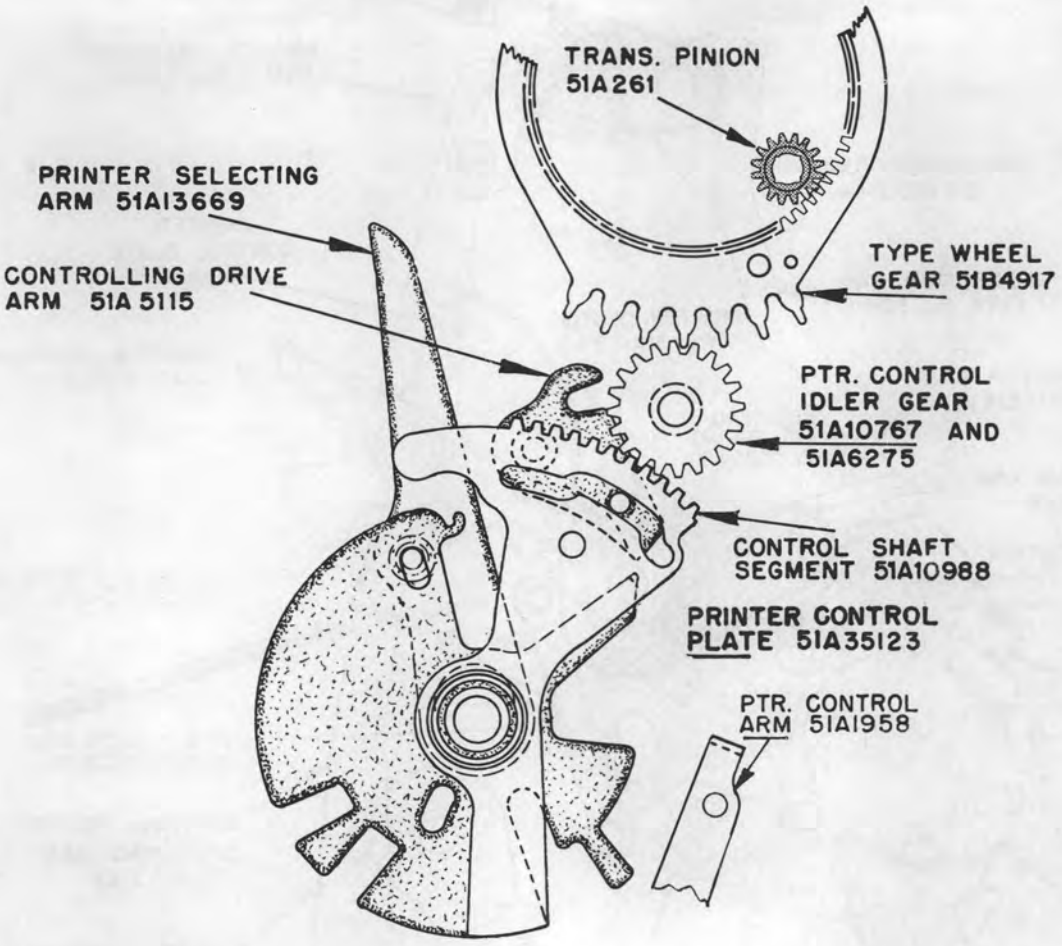
Detail Paper Feeler

The Detail Paper Feeler is provided to equalize the spacing of the Detail Paper.

As the Detail Paper increases in diameter on the Receiving Roll Hub, the Detail Paper Feeler is moved top to the front. The back portion is raised bringing the high part of the feeler under the stud in the Feed Pawl Plate. This prevents the Feed Pawl Plate from cocking as far and through the Feed Cam Operating Arm and Detail Feed Link, the Roll in the Feed Cam Arm is held further away from the Detail Feed Cam.

Therefore, the Cam will not give as much movement to the Feed Cam Arm as when the Detail Paper on the Receiving Roll Hub was low.

This provides the equal spacing of the Detail regardless of the diameter of the paper on the Receiving Roll Hub.



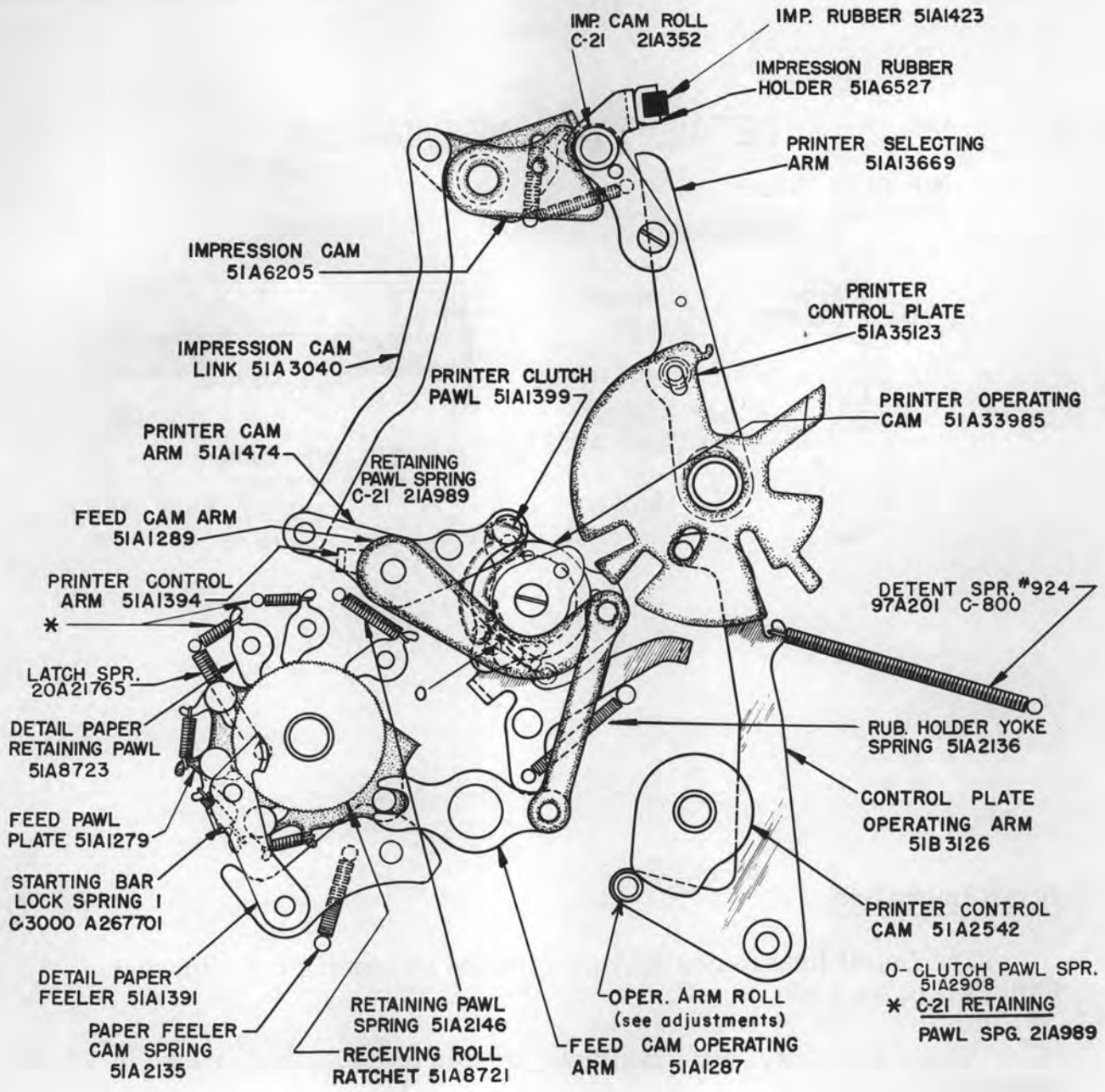
ADJUSTMENTS

Printer Selecting Arm

With the Unit Lock Lever in either of the "Reset Row 2" positions and the machine home, there should be a safe clearance between the turn over portion of the Printer Selecting Arm and the back extension of the Printer Control Plate.

The size of Roll on the Control Plate Operating Arm determines this clearance. The following Rolls are available for making this adjustment:

A-26458 (C-2000)	Slip Tension Arm Roll	.312
51A5423	Operating Arm Roll	.322
51A6828	Operating Arm Roll	.354
51A6829	Operating Arm Roll	.338


IMP. CAM ROLL C-21 21A352
IMP. RUBBER 51A1423
IMPRESSION RUBBER HOLDER 51A6527
PRINTER SELECTING ARM 51A13669
IMPRESSION CAM 51A6205
PRINTER CONTROL PLATE 51A35123
IMPRESSION CAM LINK 51A3040
PRINTER CLUTCH PAWL 51A1399
PRINTER OPERATING CAM 51A33985
PRINTER CAM ARM 51A1474
RETAINING PAWL SPRING C-21 21A989
FEED CAM ARM 51A1289
PRINTER CONTROL ARM 51A1394
*
DETENT SPR. #924 97A201 C-800
LATCH SPR. 20A21765
DETAIL PAPER RETAINING PAWL 51A8723
RUB. HOLDER YOKE SPRING 51A2136
CONTROL PLATE OPERATING ARM 51B3126
FEED PAWL PLATE 51A1279
STARTING BAR LOCK SPRING 1 C3000 A267701
PRINTER CONTROL CAM 51A2542
O- CLUTCH PAWL SPR. 51A2908
* C-21 RETAINING PAWL SPG. 21A989
DETAIL PAPER FEELER 51A1391
RETAINING PAWL SPRING 51A2146
OPER. ARM ROLL (see adjustments)
PAPER FEELER CAM SPRING 51A2135
RECEIVING ROLL RATCHET 51A8721
FEED CAM OPERATING ARM 51A1287

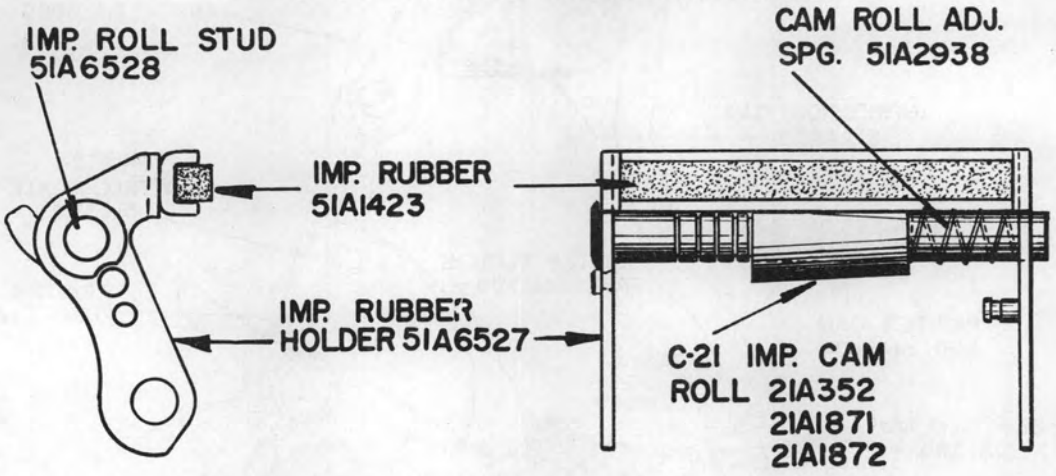
Detail Feed

The space between the prints on the Detail can be adjusted by replacing the Roll on the Feed Cam Arm with one of the following Rolls:

A2432	Drive Arm Roll #7	.403
2A1922	Drive Arm Roll #4	.385
51A6814	Reset Segment Stop Roll	.365
51A6829	Operating Arm Roll	.338
A-26458 (C-2000)	Slip Tension Arm Roll	.312

The factory selects a Roll which will give 52 prints per foot.

DETAIL TYPE MECHANISM



Detail Impression

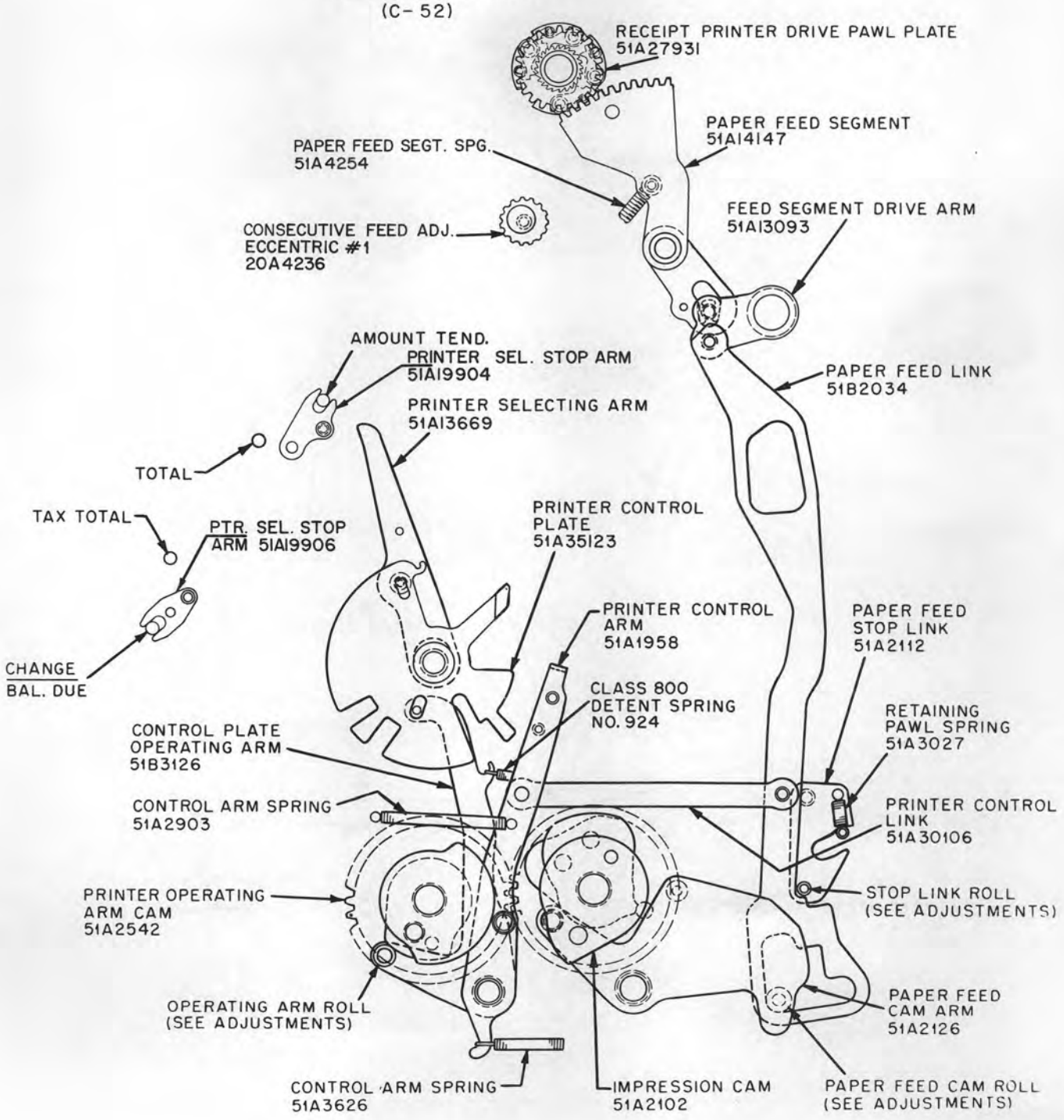
The Detail Impression may be adjusted by moving the Impression Cam Roll to the right or left.

There are three Rolls available for this to give a wide range of adjustment.

RECEIPT PRINTER

SECTION "N"

RECEIPT FEED
(C-52)

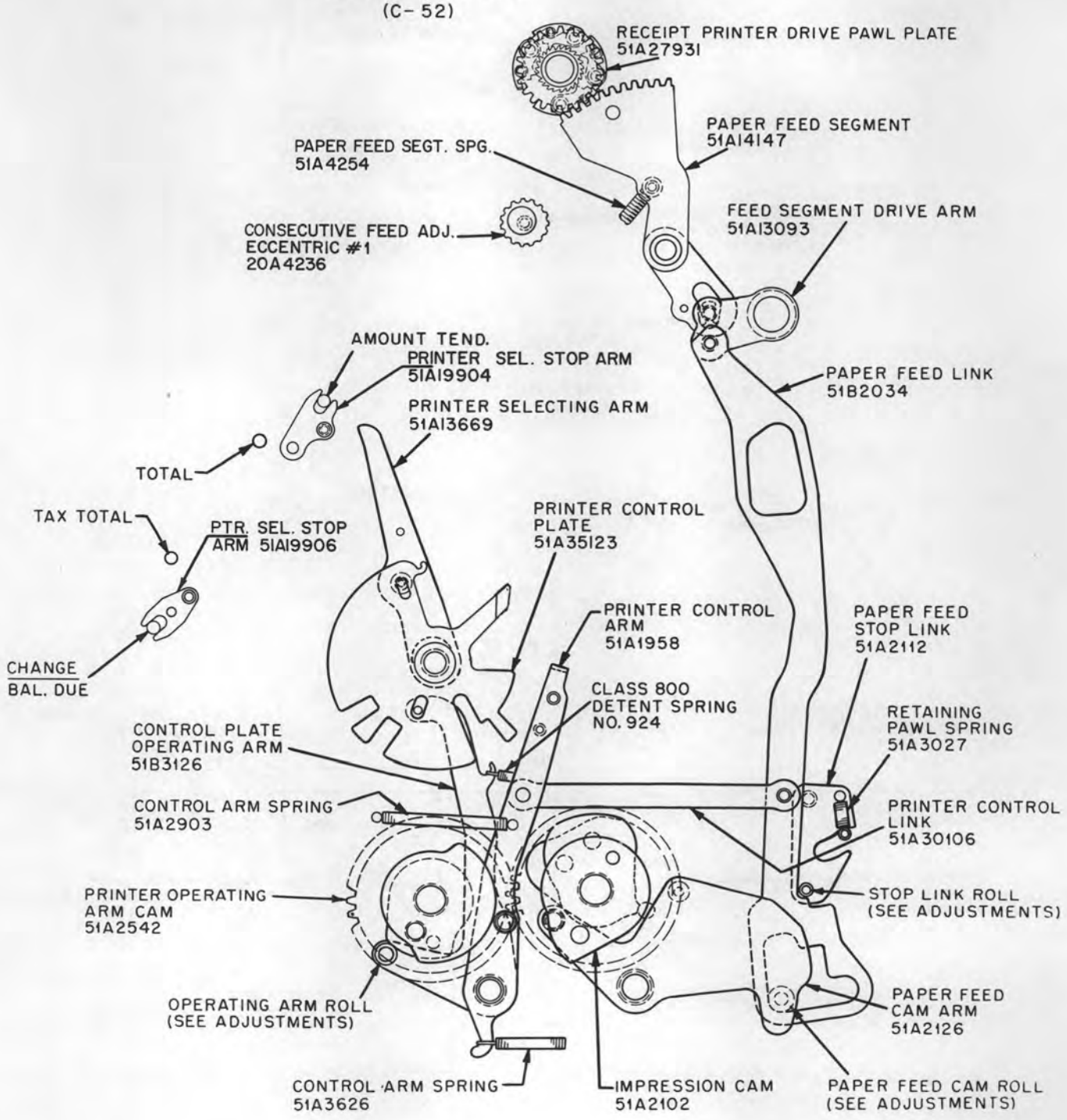


RECEIPT PRINTER

Receipt Feed - Item Operation

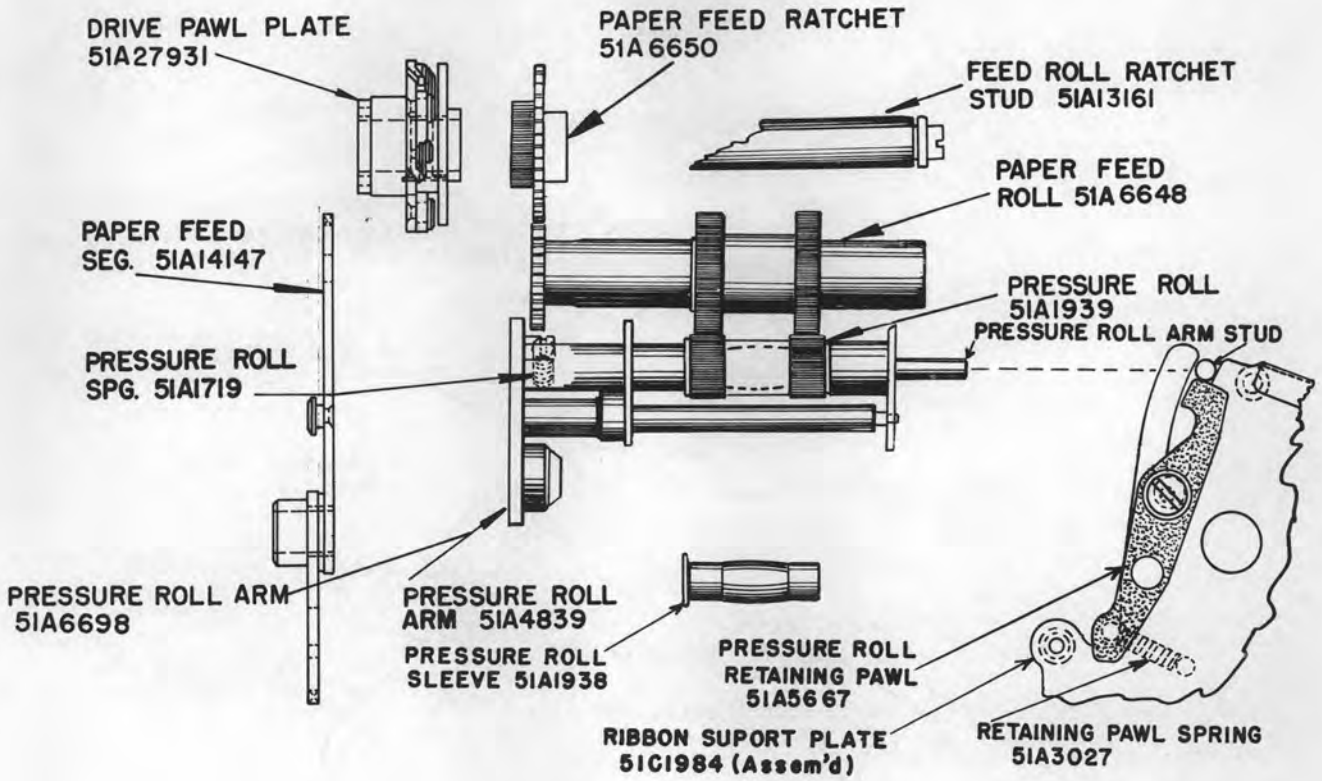
On an Item operation, the Printer Selecting Arm 51A13669 will move down the Transaction Key Bank until it is stopped by the stud in the Printer Selecting Stop Arm 51A19906. An intermediate step on the Printer Control Plate will be moved into the path of the upper turned over portion of the Printer Control Arm 51A1958.

RECEIPT FEED
(C-52)



At 1/2 turn of the handle, the high part of the Printer Control Cam 51A2542 will move away from the Roll on the Printer Control Arm and the Control Arm Spring will pull the arm to the front until the turned over extension contacts the intermediate step on the Printer Control Plate.

The Printer Control Link will move to the front positioning the Paper Feed Link 51B2034 part way to the front. The intermediate step of the Link will be moved over the roll in the Paper Feed Cam Arm.



When the Paper Feed Link was moved partially to the front, the upper step in the back of the Link was moved from under the Stop Link Roll in the Paper Feed Stop Link and the lower step positioned under it.

At 5/8 turn of the handle, an intermediate high of the Paper Feed Cam will move over the front roll and stud in the Paper Feed Cam Arm and move it up in the back. The Paper Feed Cam Roll will move into the cut-out part of the Paper Feed Link and will not give the link any movement.

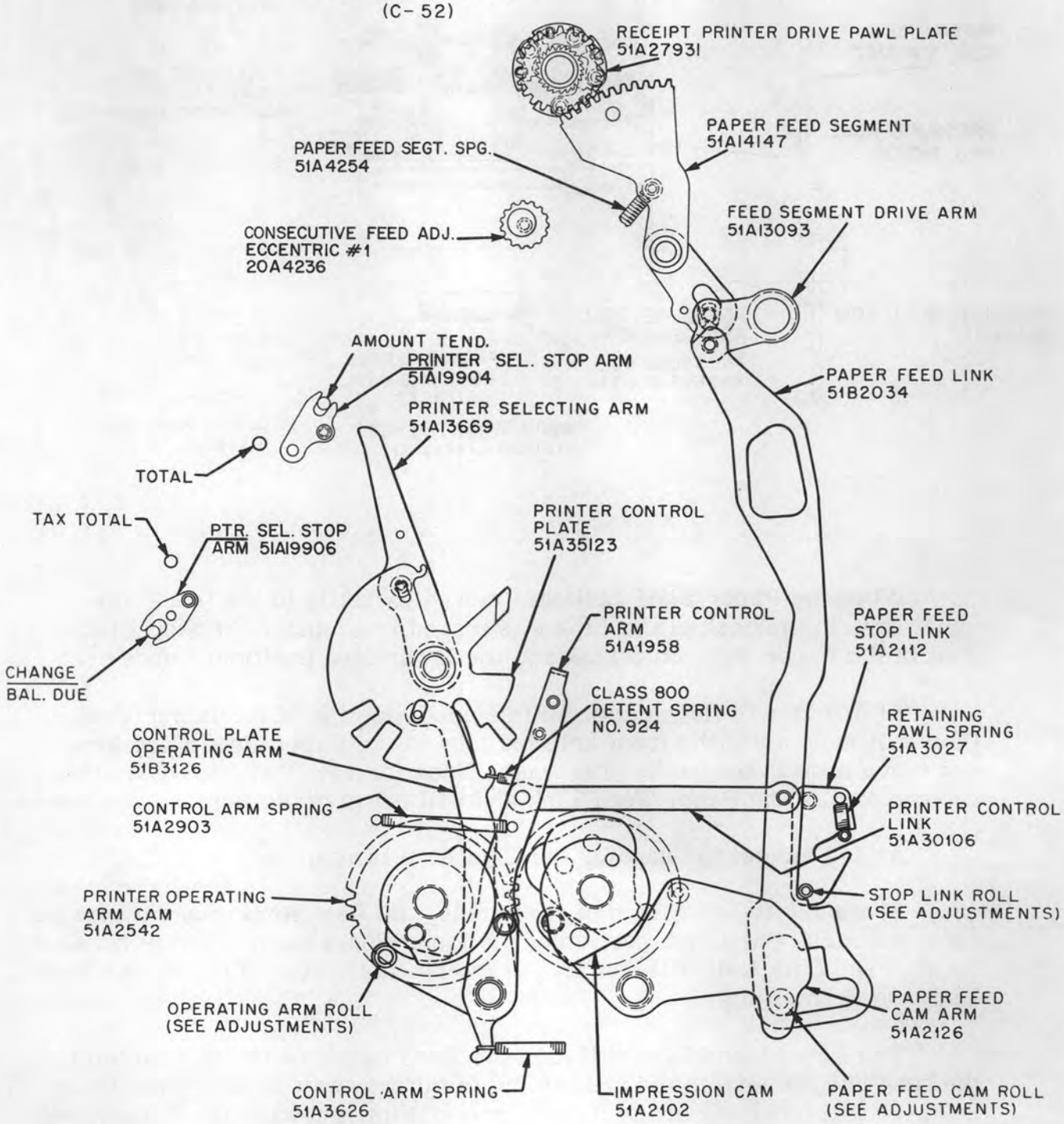
At 3/4 turn of the handle, the Cam Arm is restored.

From 7/8 to 1-1/8 turn of the handle, the Cam Arm is again carried up in the back by the high portion of the Paper Feed Cam. At this time, the Paper Feed Cam Roll will contact the intermediate step of the Paper Feed Link and carry it up.

The Paper Feed Link will turn the Feed Segment Drive Arm top to the back and the stud in the arm riding in the raceway of the Paper Feed Segment will move out of the locking part of this raceway, the Paper Feed Segment Spring will cause the Segment to move top to the front.

The Drive Pawl Plate will be turned top to the back and the Drive Pawls will ratchet over the teeth of the Paper Feed Ratchet cocking the Receipt Feed Mechanism.

RECEIPT FEED
(C-52)



As the Segment is moved top to the front, the Feed Segment Drive Arm and Paper Feed Link will be carried up. The lower step of the Paper Feed Link will contact the Stop Link Roll, stopping the Paper Feed Link and Segment.

From 1-1/2 to 2 turns of the handle, the Paper Feed Cam Arm will be moved down in the back. The Paper Feed Link and Feed Segment Drive Arm will be moved down. The Roll in the raceway of the Paper Feed Segment will move down and turn the Segment top to the back.

The Drive Pawl Plate will be moved top to the front, turning the Paper Feed Ratchet to the front to issue a Receipt.

The Pressure Rolls are holding the Receipt Paper with pressure against the Paper Feed Roll. As the ratchet is turned top to the front, the Paper Feed Rolls are turned top to the back, feeding the Receipt Paper.

The Paper Feed Link is restored bottom to the back at 1-1/2 turns of the handle. This moves the Printer Control Arm out of the Printer Control Plate.

The Paper Feed Link is restored down slightly past its home position to allow the Stop Link Roll to get over the upper step in the link safely. From home to 5° of each operation, the Paper Feed Cam Arm will move up slightly in the back to free up the Paper Feed Link.

Receipt Feed - Change Balance Due Operation

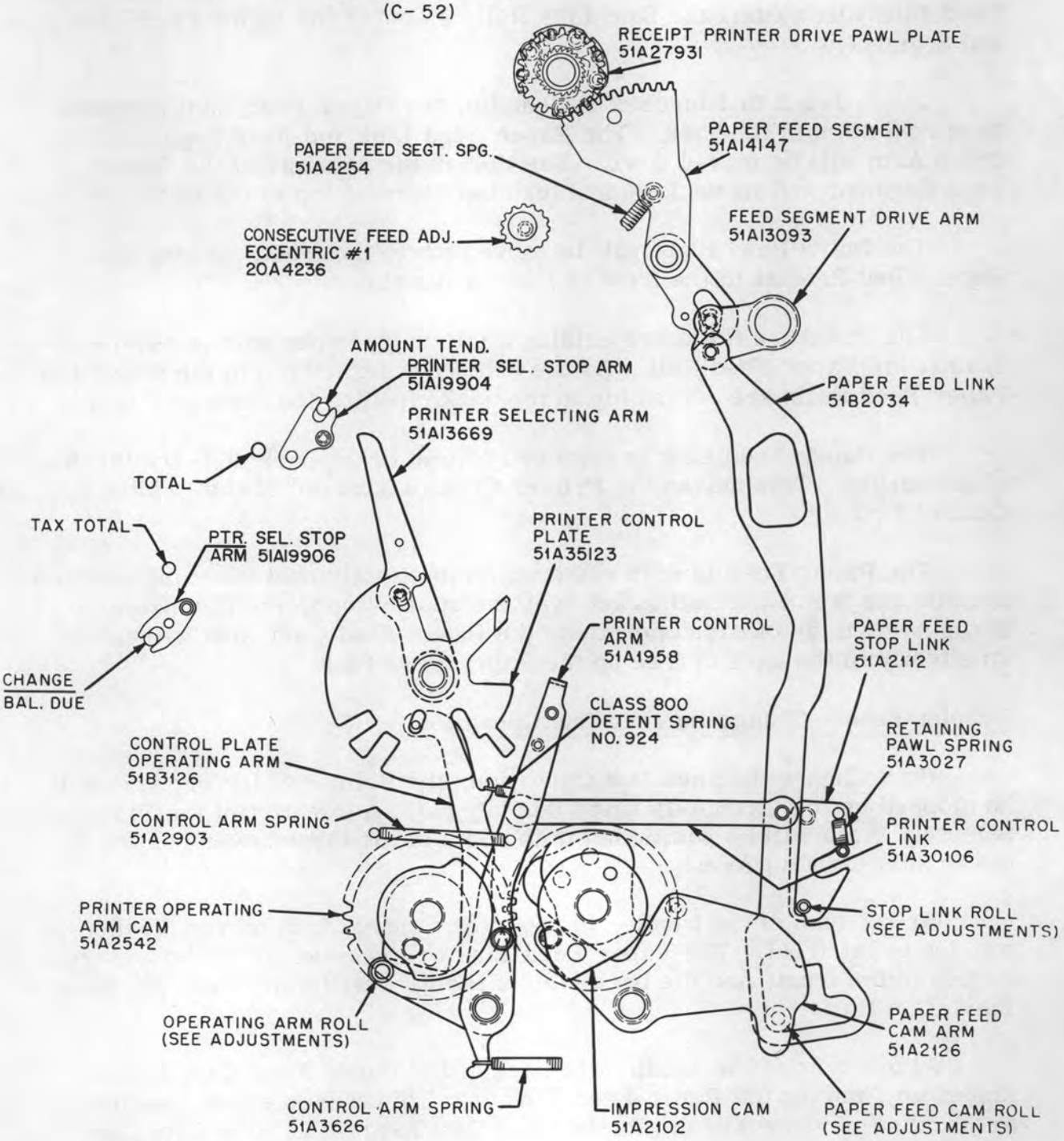
On a Change-Balance Due Operation, the Printer Selecting Arm will be stopped by the Change-Balance Due key pin. A low part of the Printer Selecting Plate will be positioned in the path of the turned over portion of the Printer Control Arm.

At 1/2 turn of the handle, the Printer Control Arm moves all the way top to the front. The Paper Feed Link will receive its full movement, bottom to the front, and the back step of the Link will move over the Paper Feed Cam Roll.

At 5/8 turn of the handle, the back of the Paper Feed Cam Arm is moved up, moving the Paper Feed Link up. This movement is identical to the first movement of the Paper Feed Cam Arm on an Item Operation. The main difference is that the Paper Feed Link is carried up at this time to cock the Paper Feed Segment for an Item Feed of the Receipt.

At 3/4 turn of the handle, the Feed Link is moved back down feeding the Receipt. This is the space between the last item on the Receipt and the Total print.

RECEIPT FEED
(C-52)



Fron 7/8 to 1-1/8 turn of the handle, the Paper Feed Cam Arm is again moved up in the back and the Paper Feed Segment is moved further top to the front cocking the Receipt for long feed.

The movement top to the front by the Segment is stopped by the consecutive Feed Adjusting Eccentric.

Fron 1-1/2 to 2 turns of the handle, the Paper Feed Link is moved down by the Paper Feed Cam Arm, issuing the long feed of the Receipt.

Receipt Feed - Taxable Total Operation

The Printer Selecting Arm is stopped by the Taxable Total key pin. A high part of the Printer Control Plate will be positioned in the path of the turned over portion of the Printer Control Arm.

At 1-1/2 turns of the handle, the high portion of the Printer Control Cam will move away from the Roll on the Printer Control Arm. The Control Arm Spring will move the Control Arm to the front slightly until it contacts the high portion of the Printer Control Plate. The Paper Feed Link receives only a slight movement and the low surface of the link will remain over the Paper Feed Cam Roll. The front stud on the back of the link will remain under the Stop Link Roll preventing the Paper Feed Link from receiving any movement by friction or vibration.

The Receipt Feed on this operation will be disabled.

Receipt Feed - Total Operation

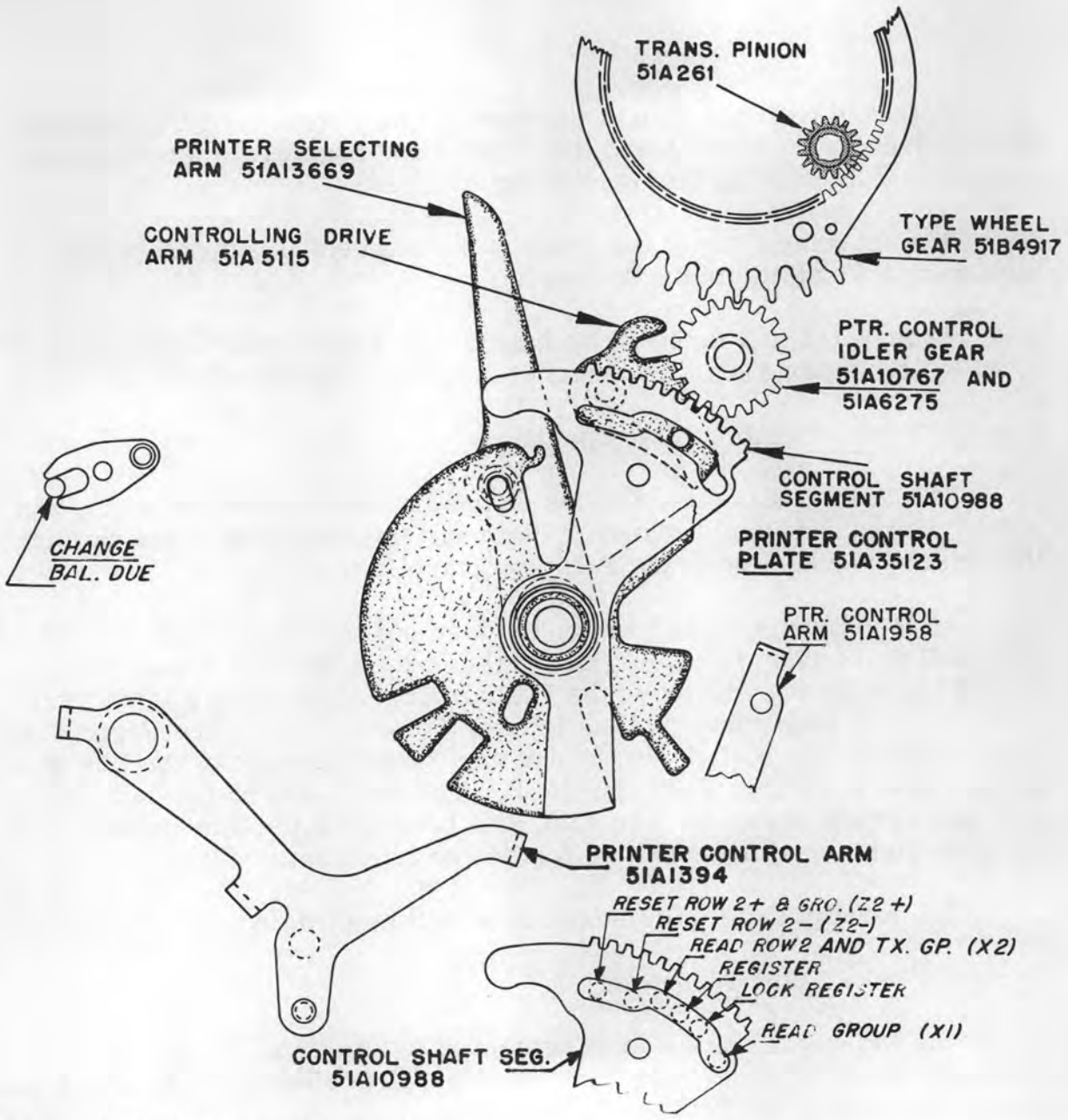
The Printer Selecting Arm is stopped by the Total key pin on a Total operation. The Printer Selector Plate is positioned to an intermediate step in the path of the Printer Control Arm.

At 1/2 turn of the handle, the Paper Feed Link is allowed to move to the front to place an intermediate step of it over the Paper Feed Cam Roll. This selects the Receipt to feed an item feed.

Receipt Feed - Amount Tendered Operation

As the Amount Tendered Key is depressed, the Key Pin moves the Printer Selecting Stop Arm 51A19904 down so that the stud in this arm is in the path of the Printer Selecting Arm.

The Printer Control Plate is positioned so as to place in the Intermediate part in the path of the Printer Control Arm selecting an item feed.



Receipt Feed - "Read Group"

When the Unit Lock Lever is moved to this position, the Control Shaft Segment is moved top to the front. The stud in the camming raceway of the Segment is in the Controlling Drive Arm.

The raceway in the Segment causes the Controlling Drive Arm to move top to the back and the back extension moves down in the path of the rear portion of the Printer Selecting Arm. This stops the movement of the arm and Printer Control Plate so there is a low surface in the path of the Printer Control Arm selecting a long feed of the Receipt.

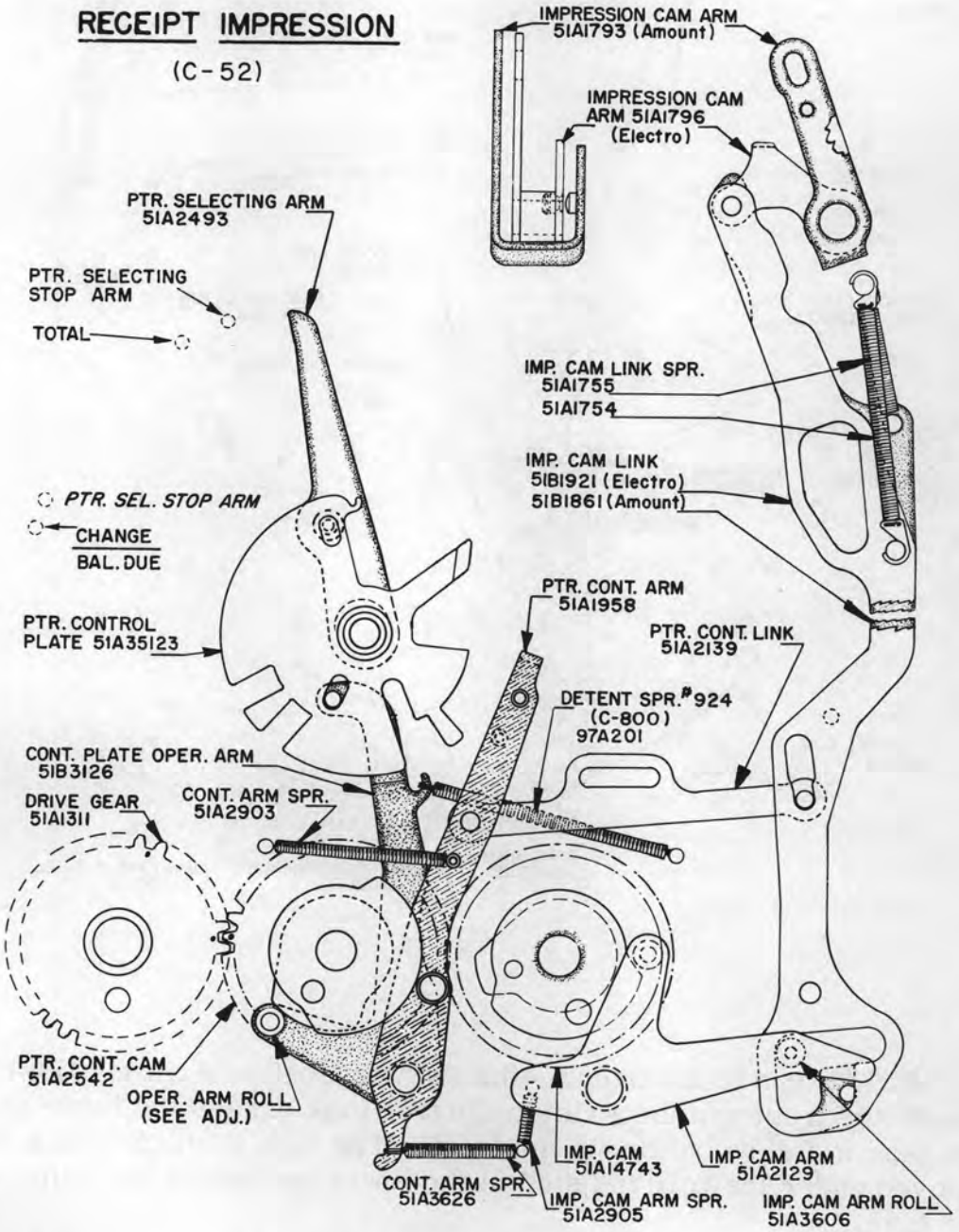
Receipt Feed - Read Row 2

When the Unit Lock Lever is moved to the "Read Row 2" position, the Control Shaft Segment gives no movement to the Controlling Drive Arm. The Printer Selecting Arm is stopped by the Stud in the Printer Selecting Arm 51A19906. This selects the Receipt to feed an item feed.

Receipt Feed - "Reset Row 2-" Or "Reset Row 2+"

When the Unit Lock Lever is moved to either of these positions, the Control Shaft Segment causes the Controlling Drive Arm to move down in the back.

The Printer Selecting Arm will be stopped in the same position as in the "Read Group" position and a low surface of the Printer Control Plate will be positioned in the path of the Printer Control Arm selecting a long feed of the Receipt.

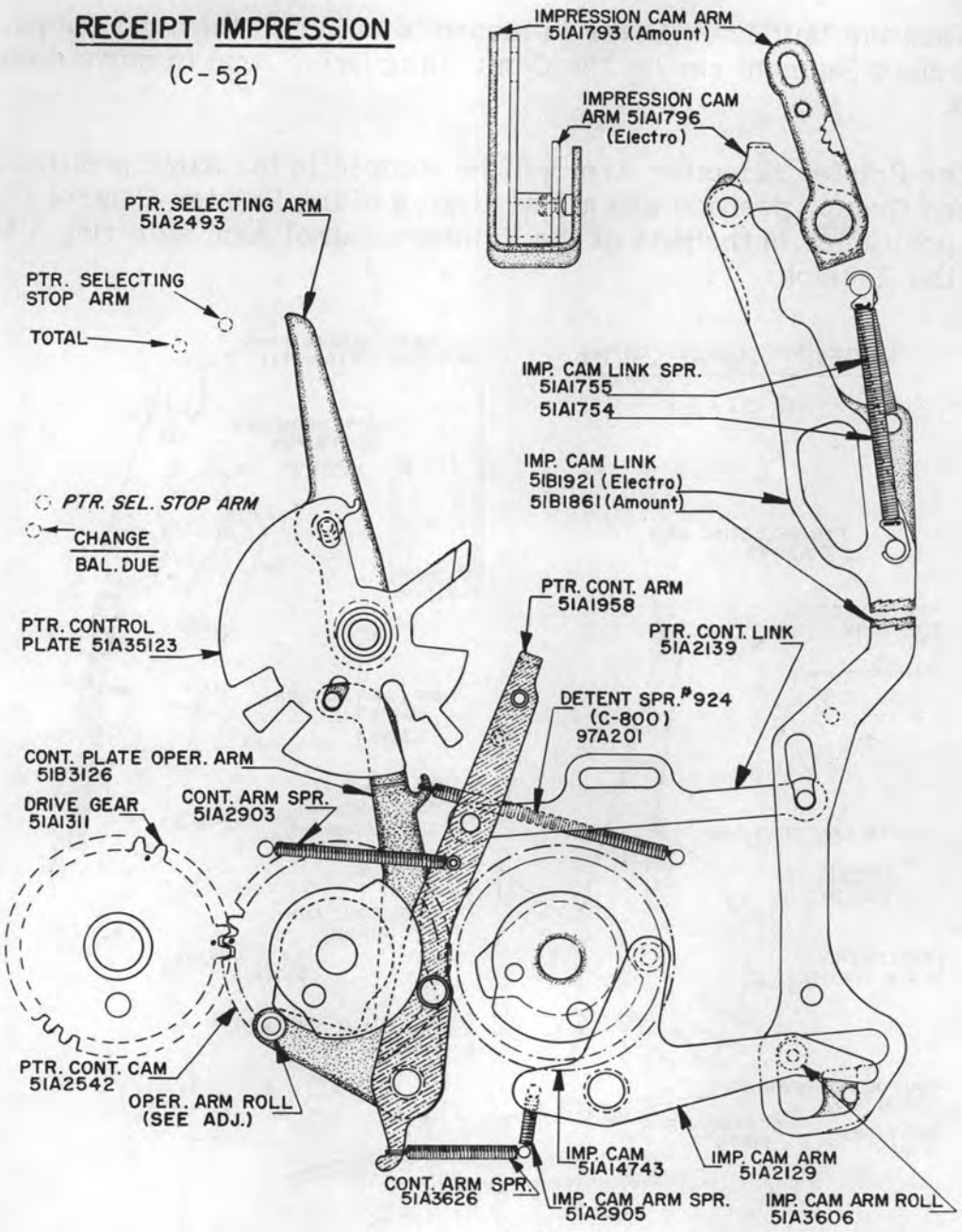


Receipt Impression - Item Operation

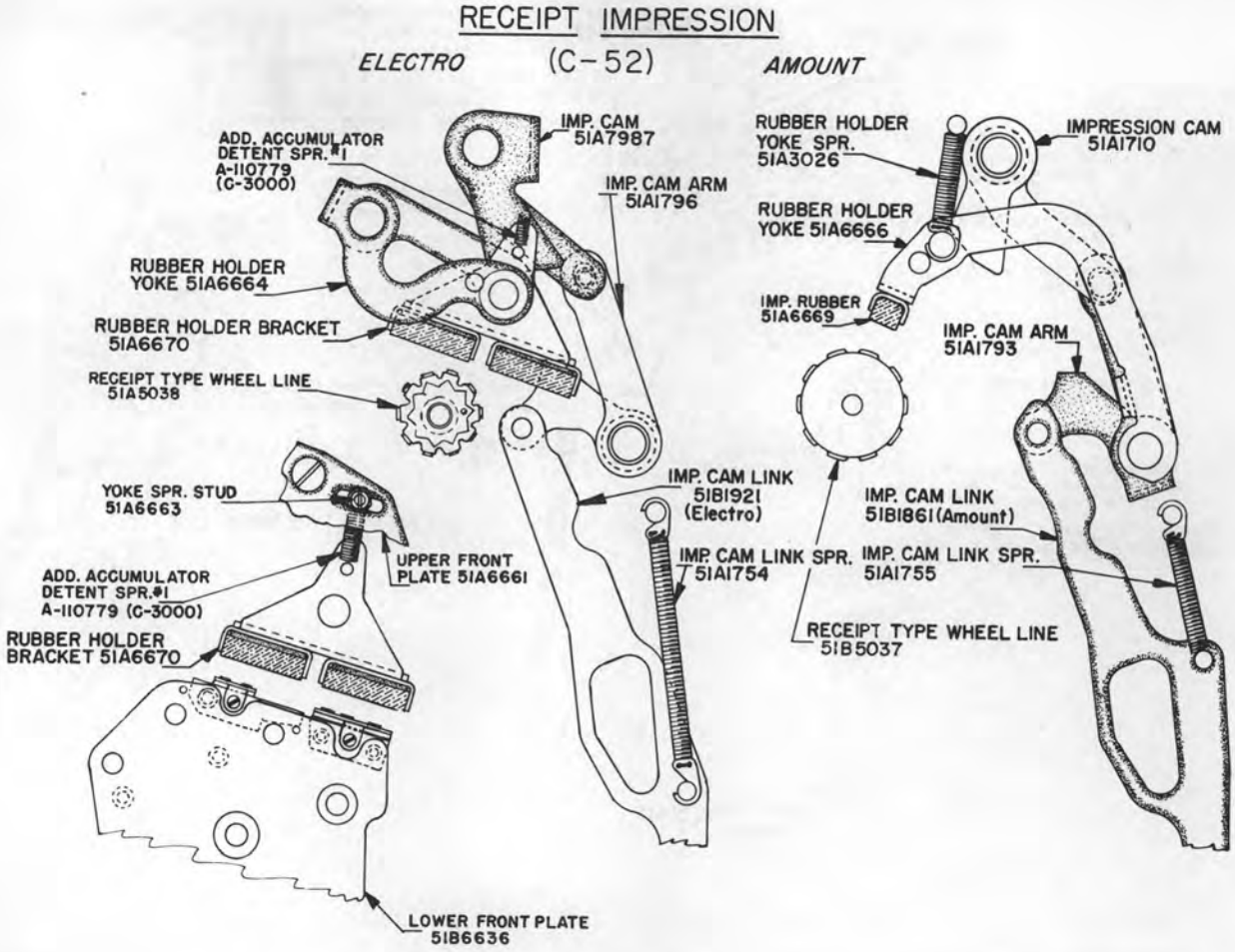
On an Item Operation, an intermediate part of the Printer Control Plate will be positioned in the path of the Printer Control Arm.

RECEIPT IMPRESSION

(C-52)



At 1/2 turn of the handle, the Printer Control Arm is allowed to move to the front and the Printer Control Link causes the Impression Cam Link to follow bottom to the front. The high surface of this link is moved under the roll and stud in the lower portion of the Impression Cam Arm.


RECEIPT IMPRESSION
ELECTRO (C-52) AMOUNT
ADD. ACCUMULATOR DETENT SPR. #1 A-110779 (C-3000)
IMP. CAM 51A7987
IMP. CAM ARM 51A1796
RUBBER HOLDER YOKE 51A6664
RUBBER HOLDER BRACKET 51A6670
RECEIPT TYPE WHEEL LINE 51A5038
YOKE SPR. STUD 51A6663
UPPER FRONT PLATE 51A6661
ADD. ACCUMULATOR DETENT SPR.#1 A-110779 (C-3000)
RUBBER HOLDER BRACKET 51A6670
LOWER FRONT PLATE 51B6636
IMP. CAM LINK 51B1921 (Electro)
IMP. CAM LINK SPR. 51A1754
RUBBER HOLDER YOKE SPR. 51A3026
RUBBER HOLDER YOKE 51A6666
IMP. RUBBER 51A6669
IMPRESSION CAM 51A1710
IMP. CAM ARM 51A1793
IMP. CAM LINK 51B1861 (Amount)
IMP. CAM LINK SPR. 51A1755
RECEIPT TYPE WHEEL LINE 51B5037

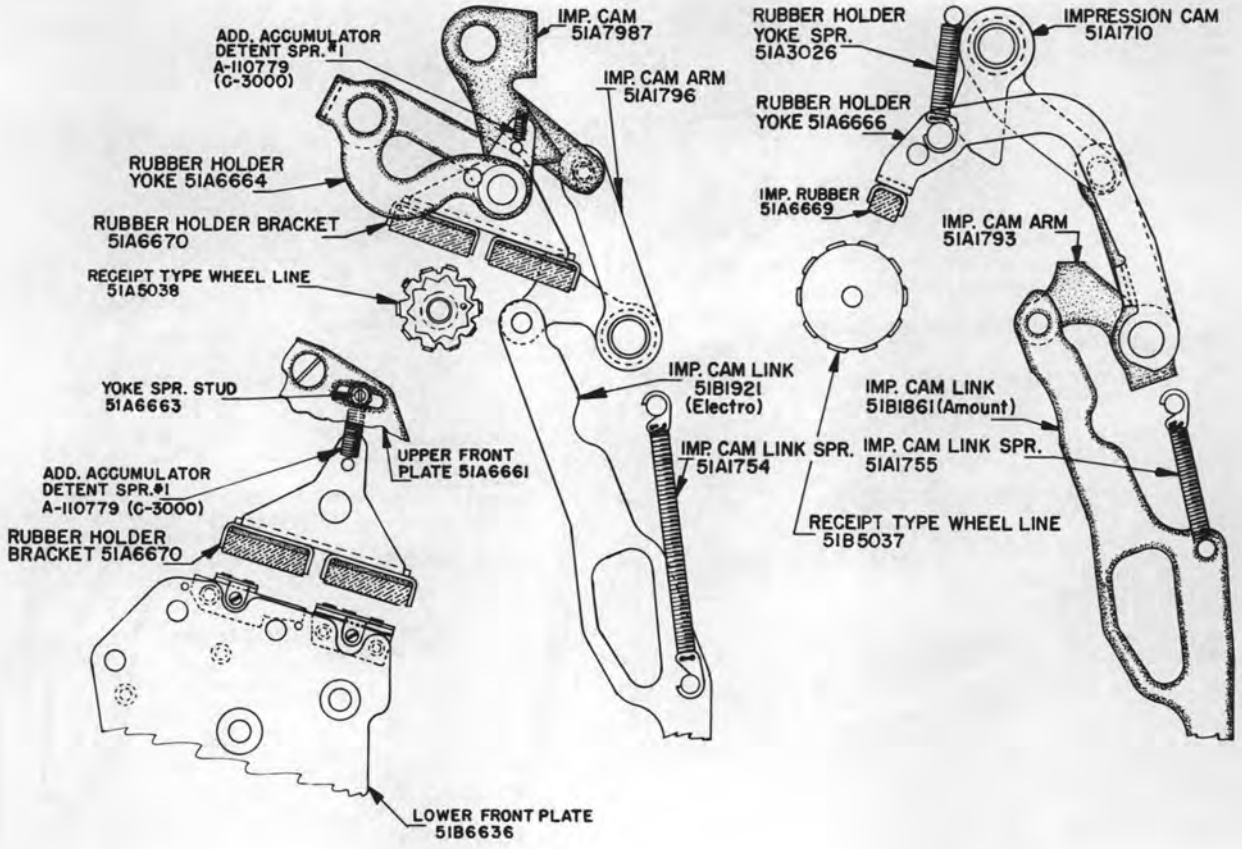
Between 1-1/4 and 1-5/8 turns of the handle, the Impression Cam Arm is moved down in the back and the roll on this arm carries the Impression Cam Link 51B1861 down. The upper end of this Link is connected to the Impression Cam Arm 51A1793 and will move it down in front.

The Impression Cam 51A1710 is moved top to the back in the high part of the cam will move the Rubber Holder Yoke 51A13890 down to make the impression.

Just after 1-5/8 turns of the handle, the high part of the Impression Cam moves away from the upper roll on the Impression Cam Arm. The Impression Cam Arm Spring will cause the cam arm to move up in the back. The Impression Cam Link and Rubber Holder Yoke will be restored by their springs.

RECEIPT IMPRESSION

ELECTRO (C-52) *AMOUNT*


ADD. ACCUMULATOR DETENT SPR. #1 A-110779 (C-3000)
IMP. CAM 51A7987
IMP. CAM ARM 51A1796
RUBBER HOLDER YOKE 51A6664
RUBBER HOLDER BRACKET 51A6670
RECEIPT TYPE WHEEL LINE 51A5038
YOKE SPR. STUD 51A6663
ADD. ACCUMULATOR DETENT SPR.#1 A-110779 (C-3000)
UPPER FRONT PLATE 51A6661
RUBBER HOLDER BRACKET 51A6670
LOWER FRONT PLATE 51B6636
IMP. CAM LINK 51B1921 (Electro)
IMP. CAM LINK SPR. 51A1754
RUBBER HOLDER YOKE SPR. 51A3026
IMPRESSION CAM 51A1710
RUBBER HOLDER YOKE 51A6666
IMP. RUBBER 51A6669
IMP. CAM ARM 51A1793
IMP. CAM LINK 51B1861 (Amount)
IMP. CAM LINK SPR. 51A1755
RECEIPT TYPE WHEEL LINE 51B5037

Receipt Impression - Change-Balance Due Operation

On a change-Balance Due Operation, a low part of the Printer Selecting Plate will be in position in the path of the Printer Control Arm.

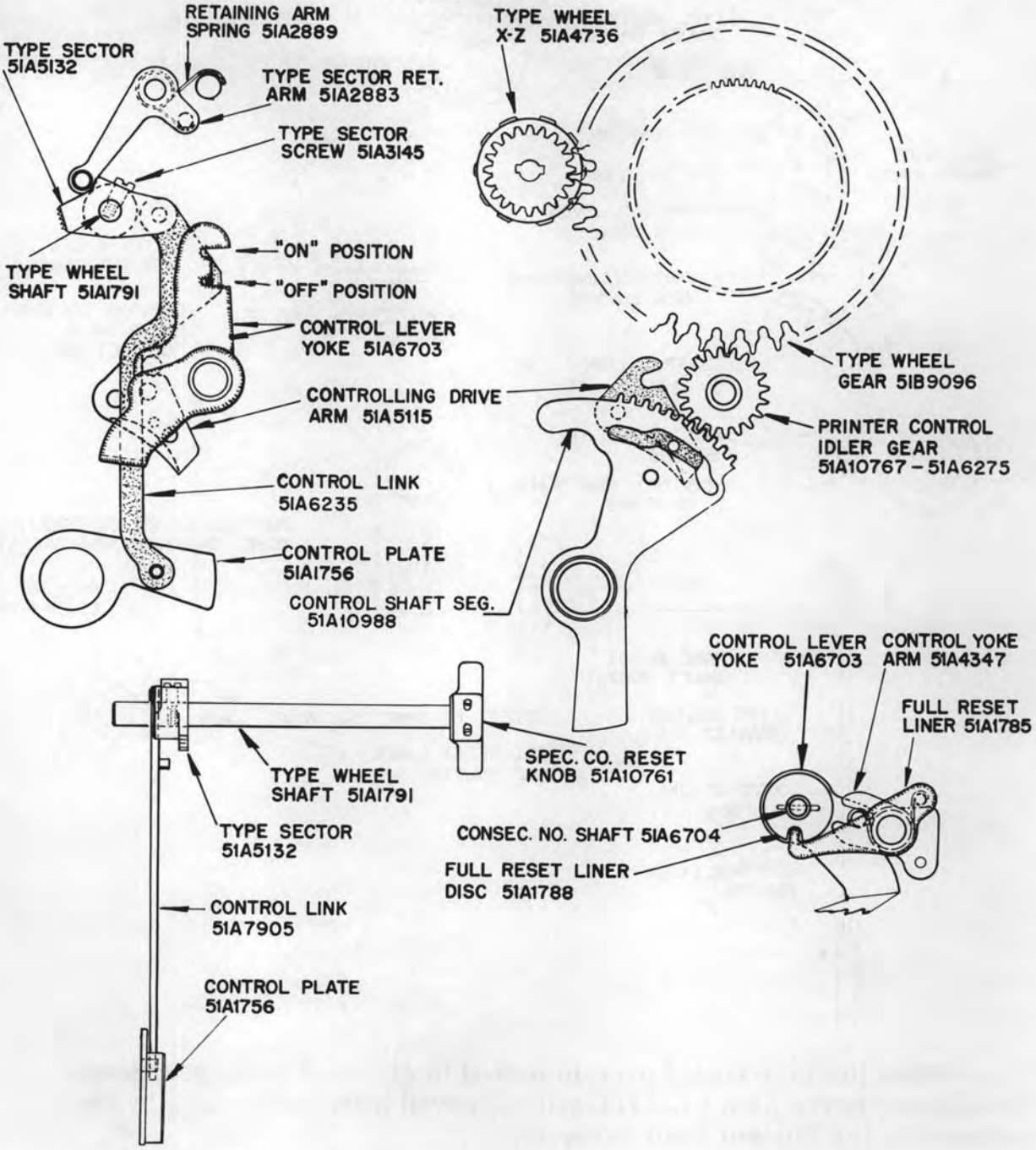
At 1/2 turn of the handle, the Printer Control Arm is allowed to move all the way top to the front. The Printer Control Link carries both Impression Cam Links (Amount and Electro) their fullest movement forward. The high surface of both Links are moved under the roll on the back end of the Impression Cam Arm.

Between 1-1/4 and 1-5/8 turn of the handle, the Impression Cam Arm is moved down in the back. The roll and stud in this portion of the arm carries both Impression Cam Links down.

The Impression Cam 51A1710 carries a Rubber Holder Yoke 51A13890 down against the Type Wheels to make the impression.

The Impression Cam 51A7987 moves down on the Rubber Holder Bracket 51A6670 moving it down to make the Electro, Date and Consecutive Number impression.

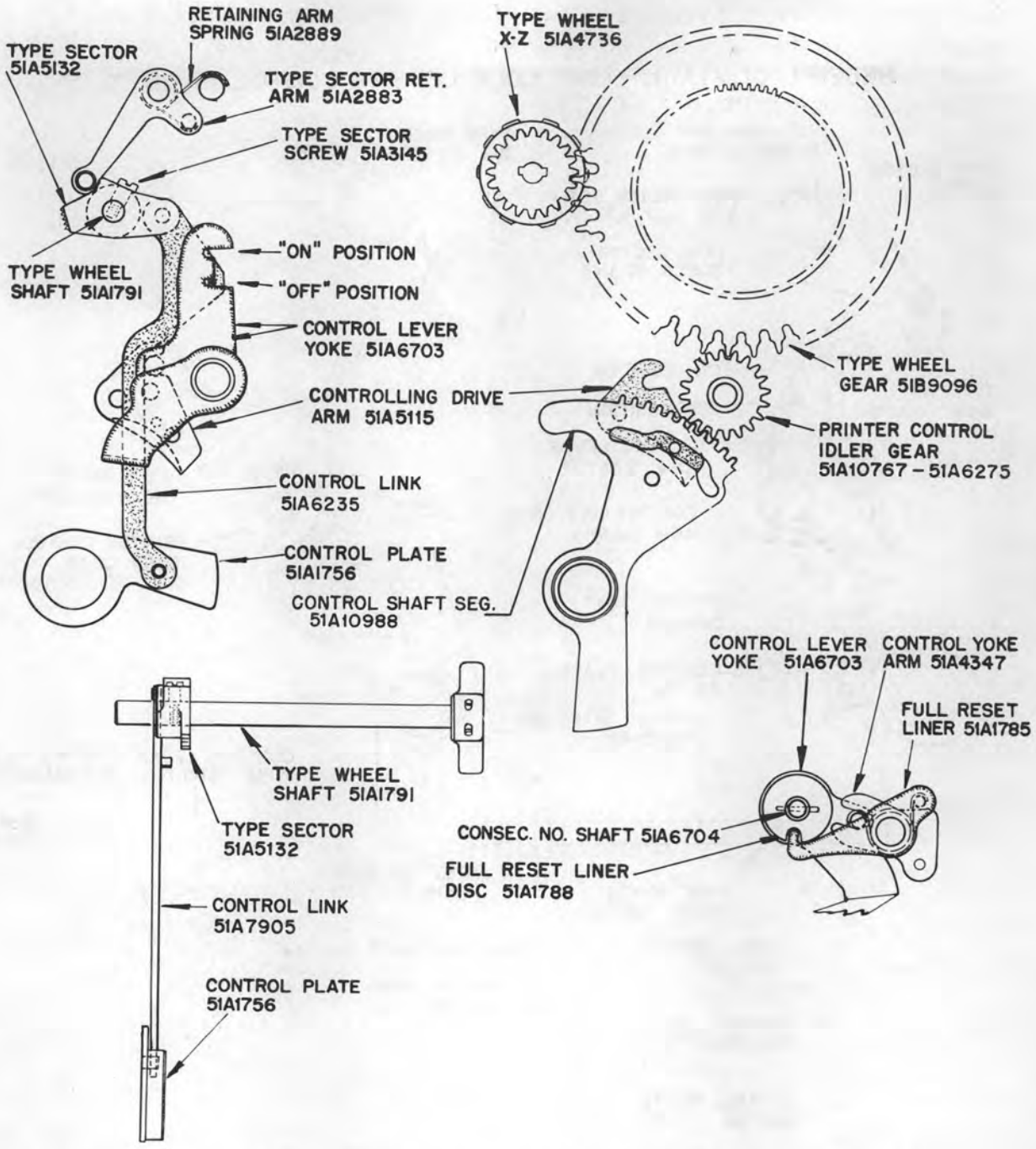
RECEIPT CONTROL – UNIT LOCK LEVER & CONTOL KNOB
(C-52)



Receipt On And Off Control

With the Control Knob turned top to the front, the Receipt is abled and will print and feed when selected by a Transaction Key.

The Control Arm can only be turned to the "Off" position when the Unit Lock Lever is in the "Read Group" or "Reset Row 2+" or "-" position.



When the Unit Lock Lever is moved to either of these positions, the Control Drive Arm 51A5115 will be moved down in the back by the raceway in the Control Shaft Segment.

The Control Lever Yoke will move top to the front. This will move the upper dwell in the yoke away from the stud in the Control Link 51A7905.

The Control Arm can then be turned top to the back. This will move the Type Selector 51A5132 up in the front and position the front of the selector on the Detail Type Line.

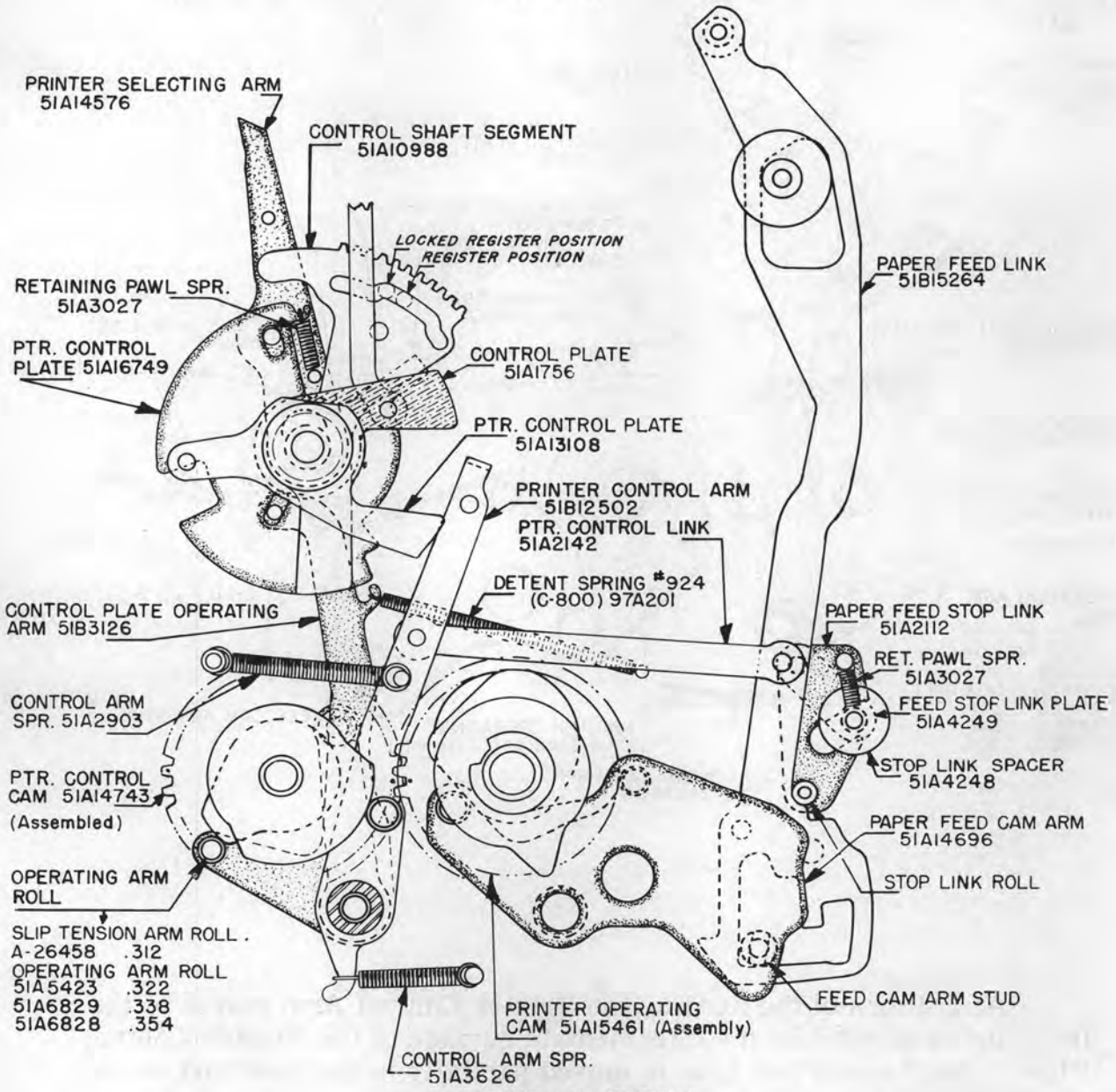
When the machine is operated, four small lines will print on the Detail to indicate that the Receipt has been turned off.

Also, as the Control Knob is turned top to the back, the Control Link 51A7905 will be moved down. The Control Plate 51A1756 will move down in the back and be positioned in the path of the Printer Control Arm. The Printer Control Arm will be held to the back disabling receipt on all operations.

When the Unit Lock Lever is moved back to the "register" position, the Control Lever Yoke will be moved top to the back. The Lower dwell in the yoke will be positioned over the stud in the Control Link, locking the Control Knob in the "Off" position.

STUB RECEIPT MECHANISM

(C-52)


PRINTER SELECTING ARM 51A14576
CONTROL SHAFT SEGMENT 51A10988
LOCKED REGISTER POSITION
REGISTER POSITION
RETAINING PAWL SPR. 51A3027
PTR. CONTROL PLATE 51A16749
CONTROL PLATE 51A1756
PTR. CONTROL PLATE 51A13108
PRINTER CONTROL ARM 51B12502
PTR. CONTROL LINK 51A2142
DETENT SPRING #924 (C-800) 97A201
CONTROL PLATE OPERATING ARM 51B3126
CONTROL ARM SPR. 51A2903
PTR. CONTROL CAM 51A14743 (Assembled)
OPERATING ARM ROLL
SLIP TENSION ARM ROLL . A-26458 .312
OPERATING ARM ROLL 51A5423 .322 51A6829 .338 51A6828 .354
PAPER FEED LINK 51B15264
PAPER FEED STOP LINK 51A2112
RET. PAWL SPR. 51A3027
FEED STOP LINK PLATE 51A4249
STOP LINK SPACER 51A4248
PAPER FEED CAM ARM 51A14696
STOP LINK ROLL
FEED CAM ARM STUD
PRINTER OPERATING CAM 51A15461 (Assembly)
CONTROL ARM SPR. 51A3626

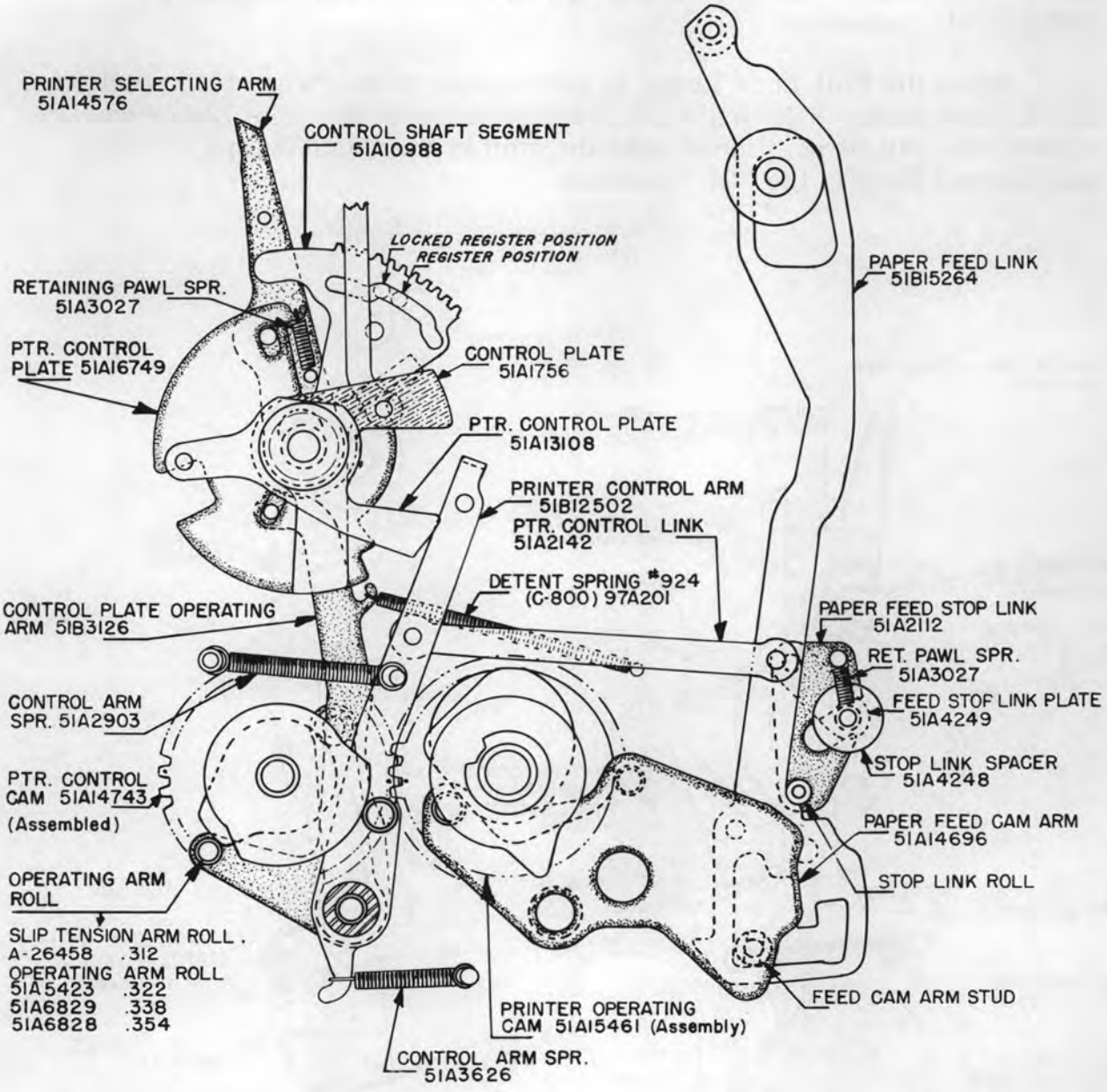
STUB RECEIPT

Receipt Feed Item Operation

On an Item operation, the Printer Control Plate is positioned as to place in the intermediate part in the path of the Printer Control Arm.

STUB RECEIPT MECHANISM

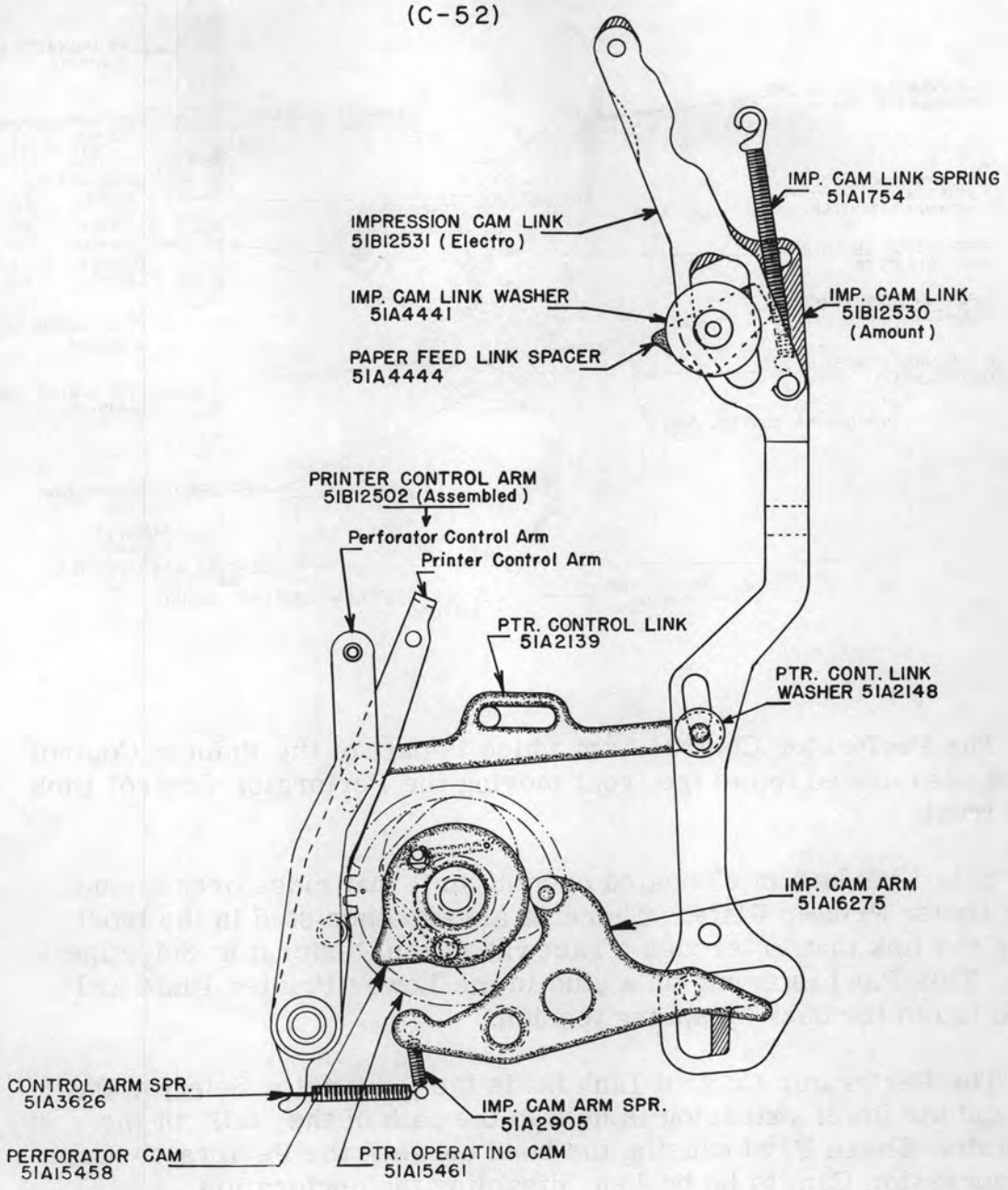
(C-52)



At 1/2 turn of the handle, the Printer Control Arm moves to the front and is stopped by the intermediate surface of the Printer Control Plate. The Paper Feed Link is moved partially to the front and an intermediate part of the link is moved over the stud in the back end of the Paper Feed Cam Arm selecting an item feed of the Receipt.

STUB RECEIPT MECHANISM

(C-52)

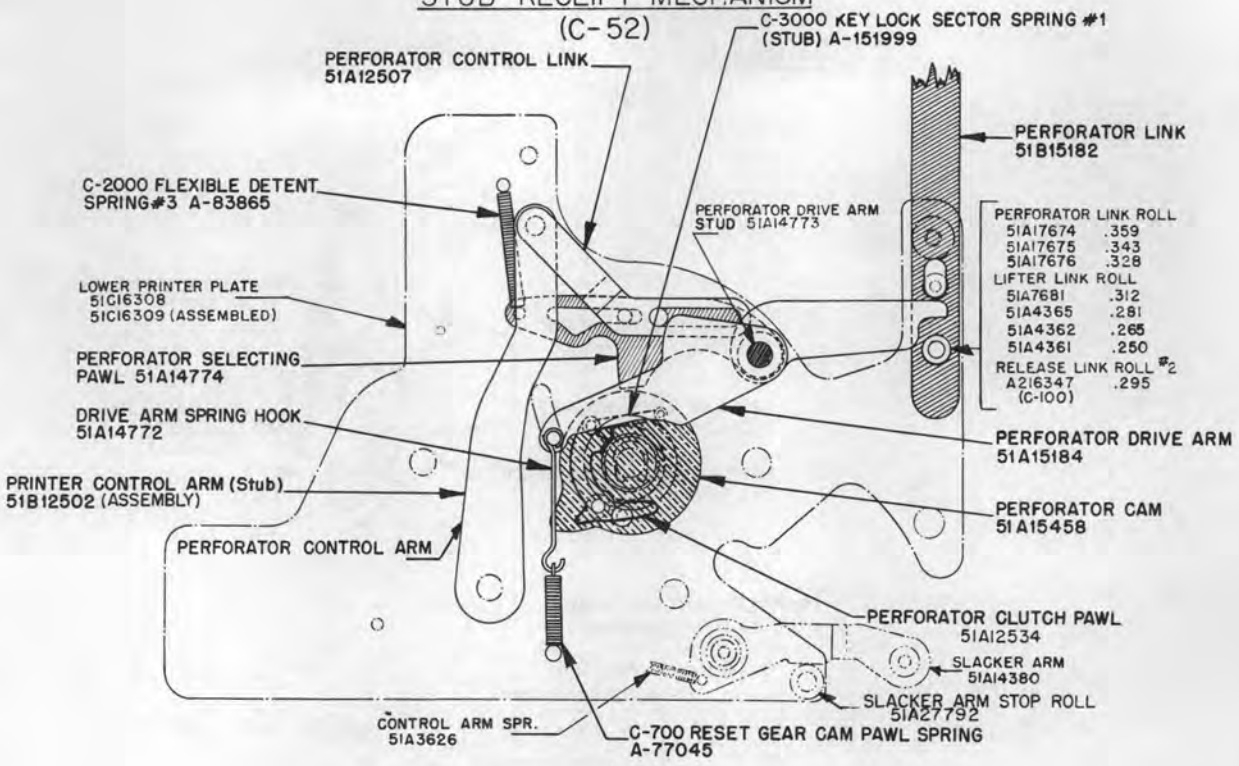


Receipt Impression - Item Operation

On an Item Operation, the Printer Control Plate is positioned so as to place an intermediate part in the path of the Printer Control Arm.

At 1/2 turn of the handle, the Printer Control Arm is allowed to move to the front until it is stopped by the intermediate part of the Control Plate.

STUB RECEIPT MECHANISM
(C-52)



The Perforator Control Arm which is part of the Printer Control Arm is also moved top to the front moving the Perforator Control Link to the front.

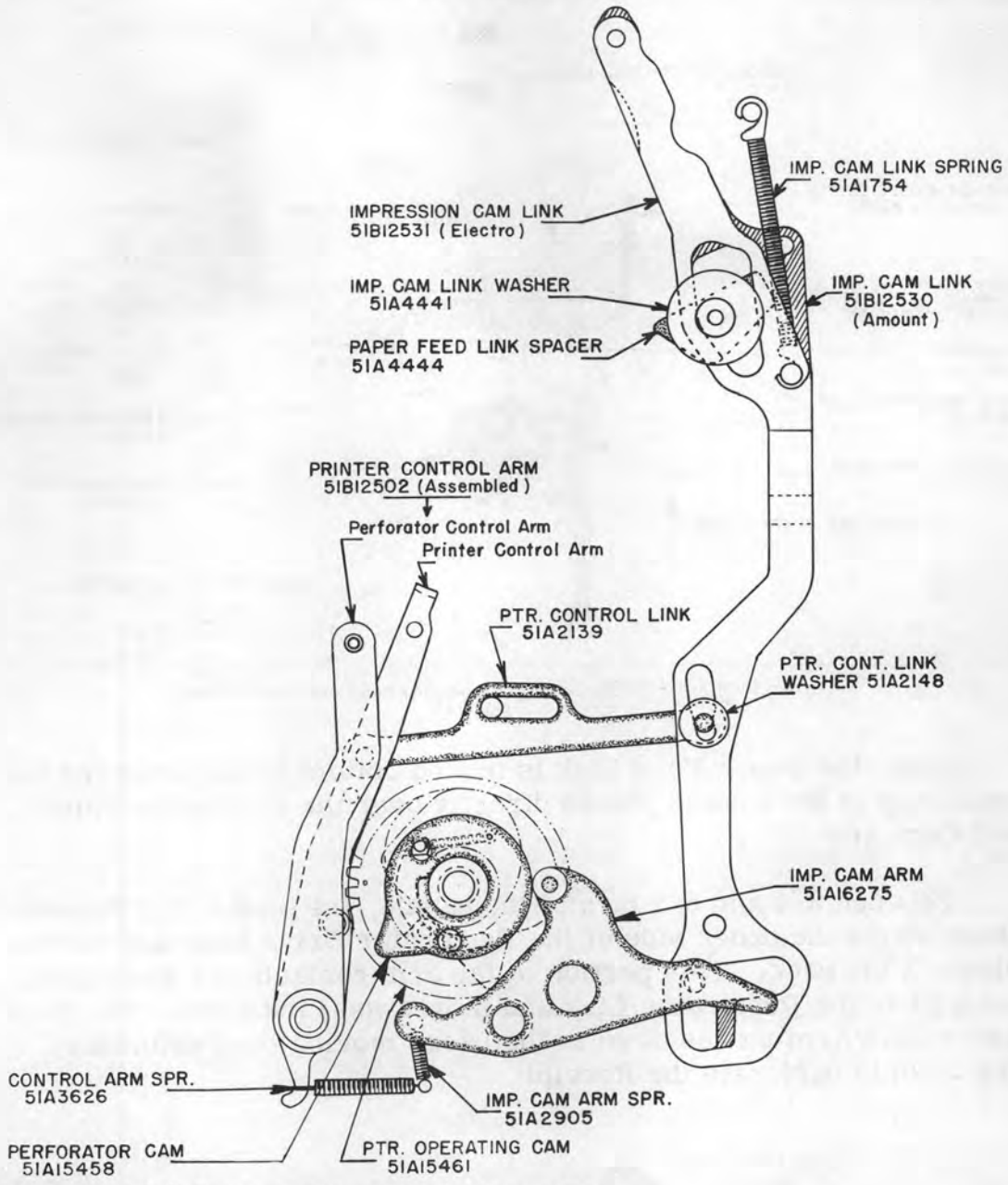
This Link has an elongated opening in it that rides over a stud in the Lower Printer Plate. There is also another stud in the front part of the link that is through a raceway of the Perforator Selecting Pawl. This Pawl is swung on a stud in the Lower Printer Plate and is held top to the back by spring tension.

The Perforator Control Link holds the Perforator Selector Pawl down and the lower extension is held to the path of the "tail" of the Perforator Clutch Pawl causing the bond between the Perforator Cam and Impression Cam to be broken, disabling the perforation.

Between 1-1/2 and 1-5/8, the Impression Cam Arm is moved down in the back. The Impression Cam Arm Roll carries the Impression Cam Link down. The upper end of this link is connected to the Impression Cam Arm 51A1793 and will move it down in front.

The Impression Cam is moved top to the back and the high portion will move the Rubber Holder Yoke down to make the item impression.

Just after 1-5/8, the high part of the Impression Cam moves away from the upper roll on the Impression Cam Arm. The Impression Cam Arm spring will cause the arm to move up in the back. The Impression Cam Link and Rubber Holder Yoke will be restored by their springs.



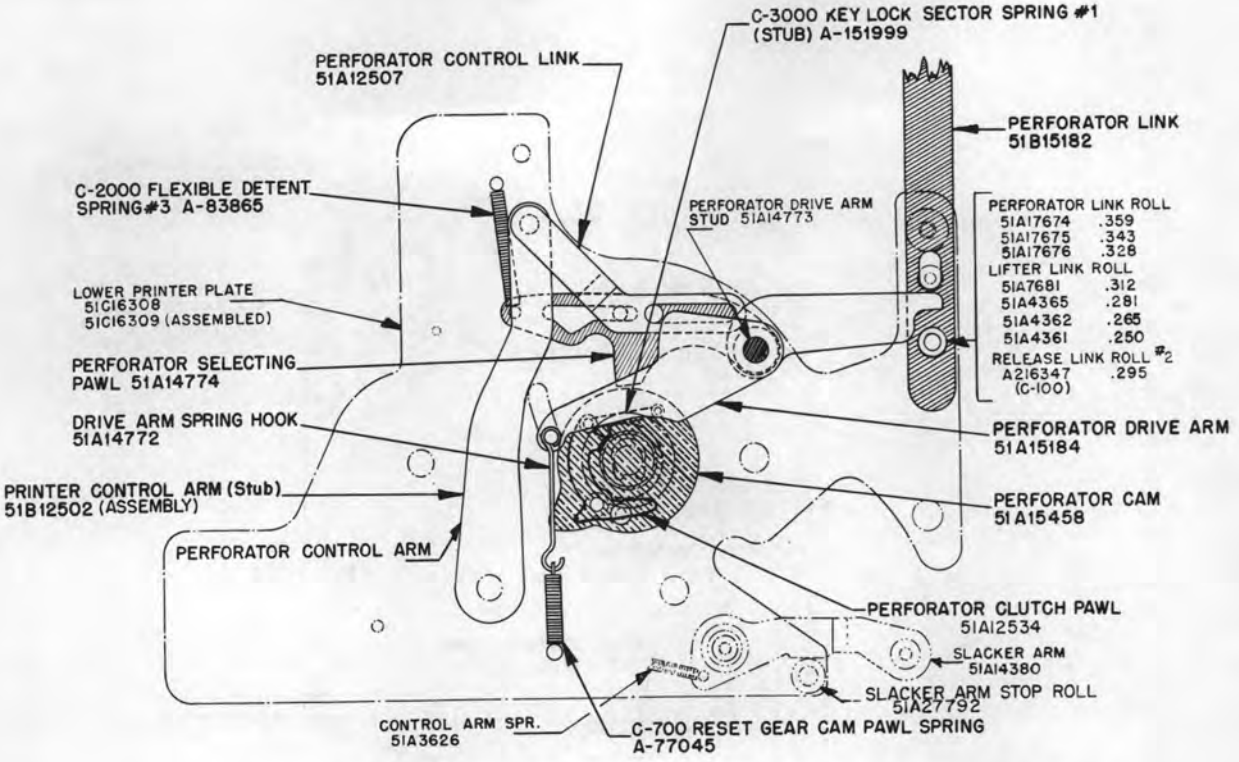
Receipt Feed & Impression Total Operation

In a Total Operation, a low surface of the Printer Control Plate will be positioned in the path of the Printer Control Arm.

At 1/2 turn of the handle, the Printer Control Arm and Perforator Control Arm will be moved top to the front the full distance.

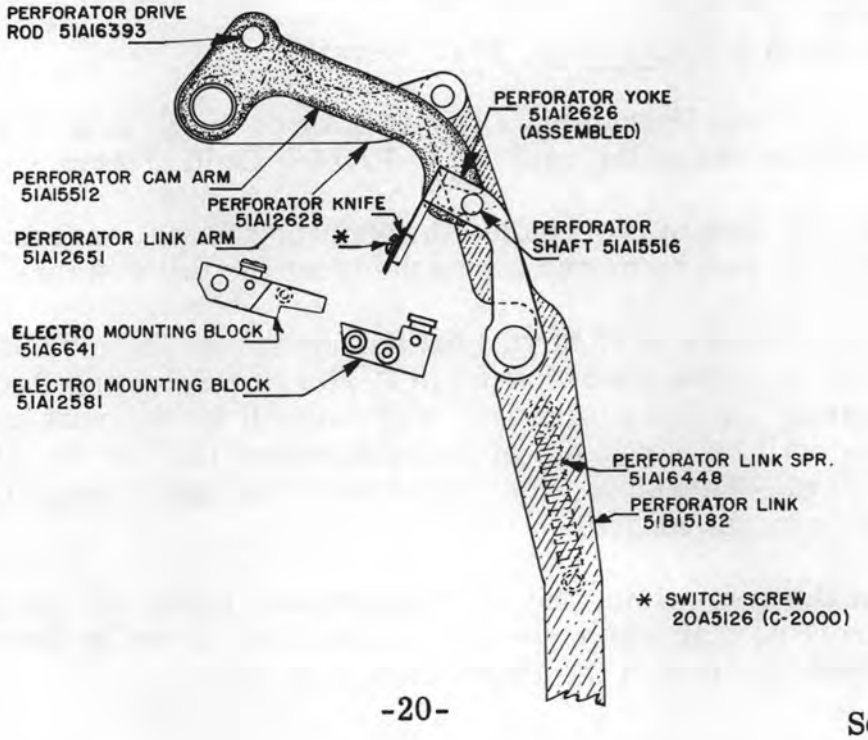
The Perforator Control Link will be moved forward until the stud of the link is above the dwell in the Perforator Selecting Pawl. At this time, spring tension on the pawl will raise it in the front and the lower extension will be moved out of the path of the "tail" of the Perforator Clutch Pawl. Therefore, the Perforator Cam and Printer Operating Cam will remain bonded.

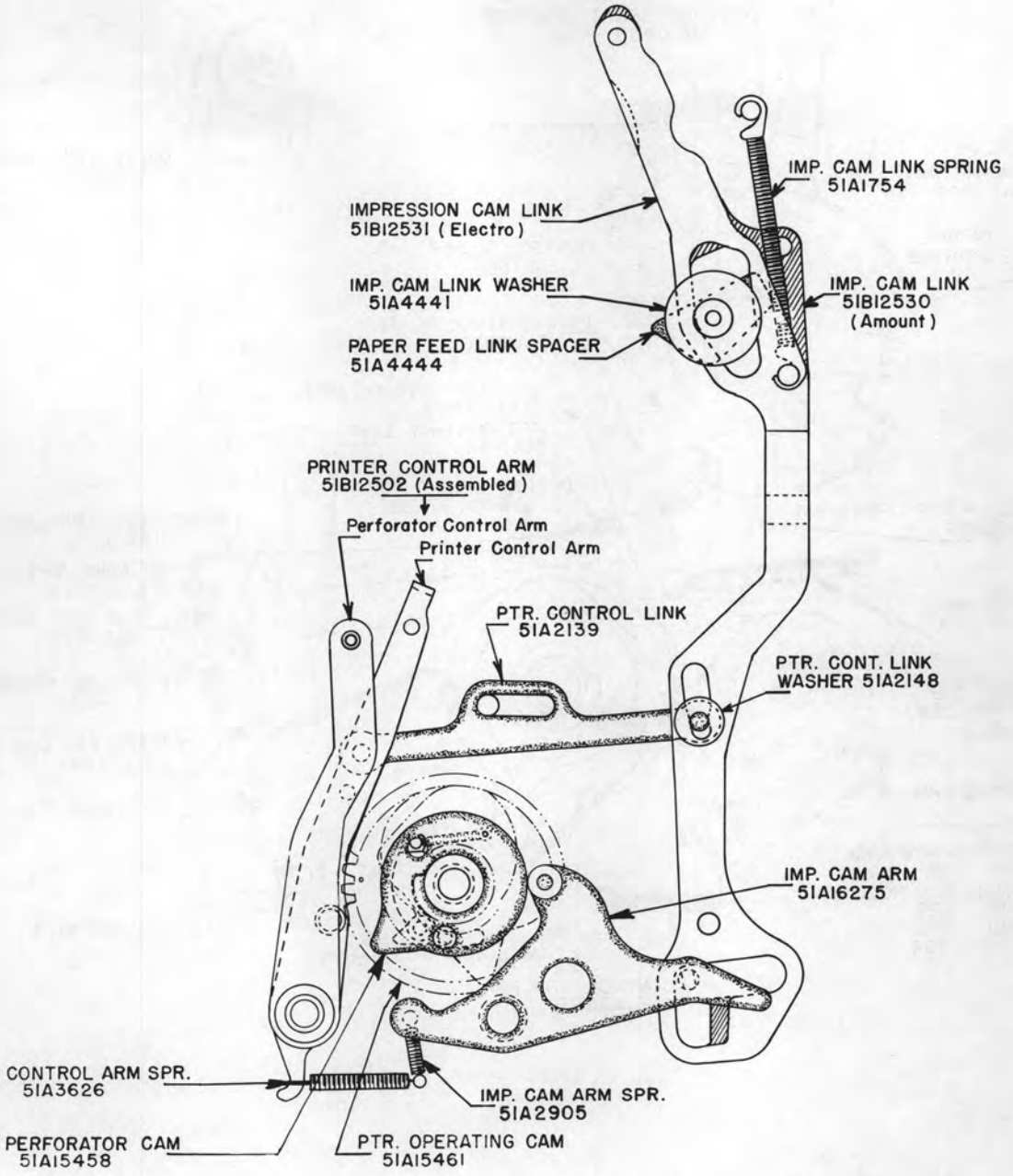
At the same time, the Impression Cam Links will be moved bottom to the front so that a high surface of both links is under the roll and stud in the lower portion of the Impression Cam Arm.



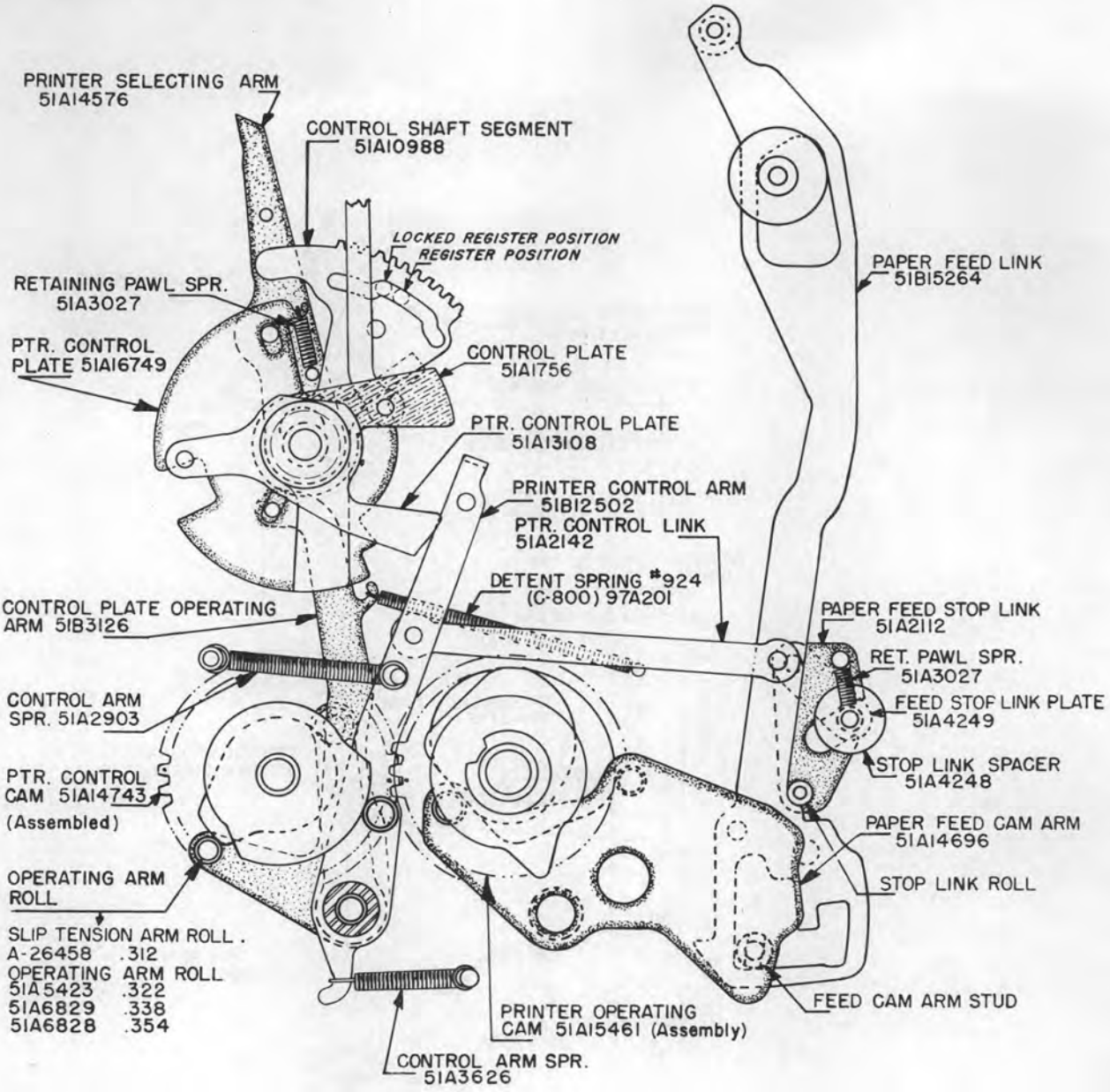
Also, the Paper Feed Link is moved bottom to the front and the lowest step in the Link is placed directly over the stud in the Paper Feed Cam Arm.

Between 3/4 and 5/8 turn of the handle, the stud in the Perforator Cam contacts the under side of the Perforator Drive Arm and moves it down in the back. This portion of the arm contacts the Perforator Link Roll in the Perforator Link and moves the Link down. The Perforator Cam Arm moves down in the back, moving the Perforator Yoke down to perforate the Receipt



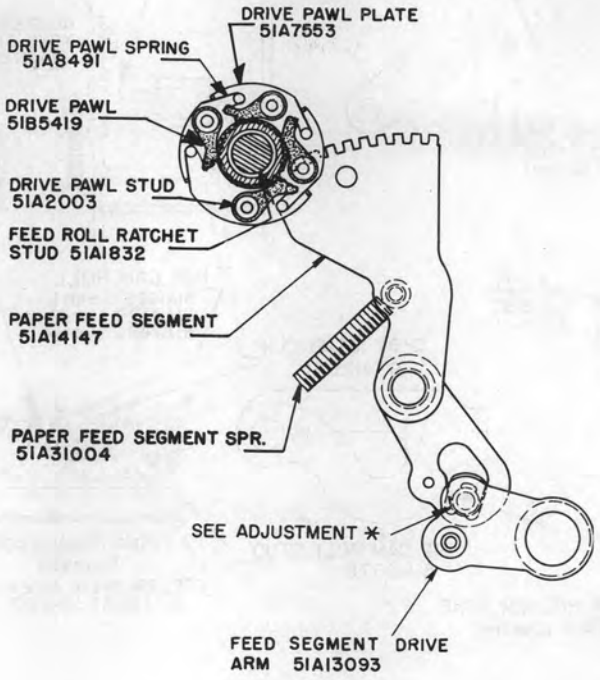


Slightly before 1-1/4 turns of the handle, the high surface of the Perforator Cam will contact the Roll on the outside of the Impression Cam Arm. The back end of the arm will move down and the stud in this portion will cause the Impression Cam Links (Amount and Electro) to move down, making the impression on a Receipt.



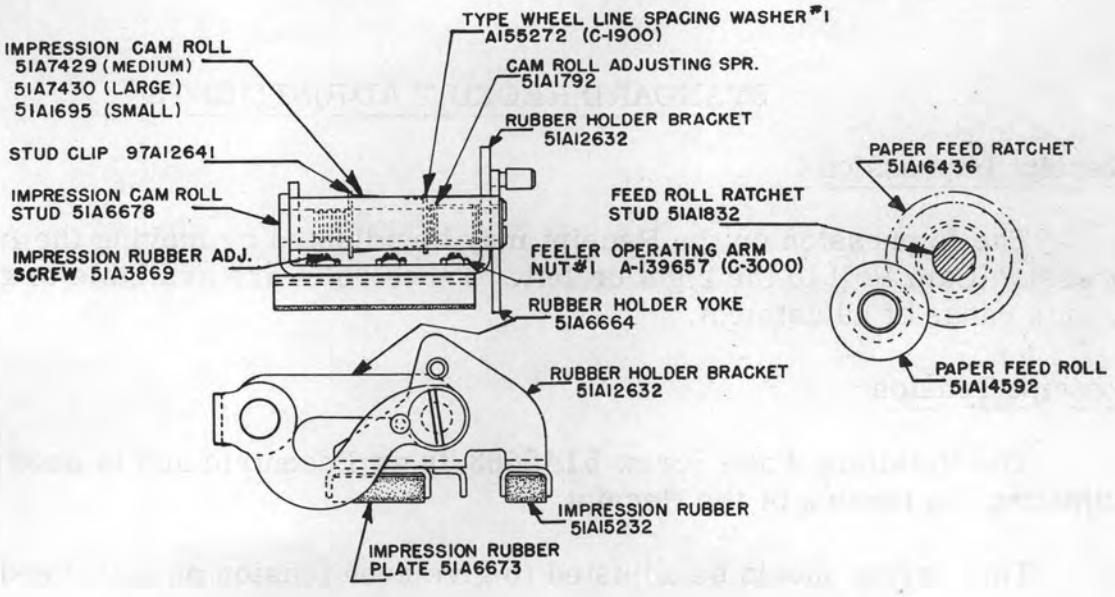
Immediately after the impression is made, the Paper Feed Cam will cause the Paper Feed Cam Arm to move the Paper Feed Link up to feed the Receipt and slightly past 1-1/2 turns , the intermediate part of the Cam will move under the roll on the Cam Arm. At this time, the feed of the Receipt will be stopped momentarily.

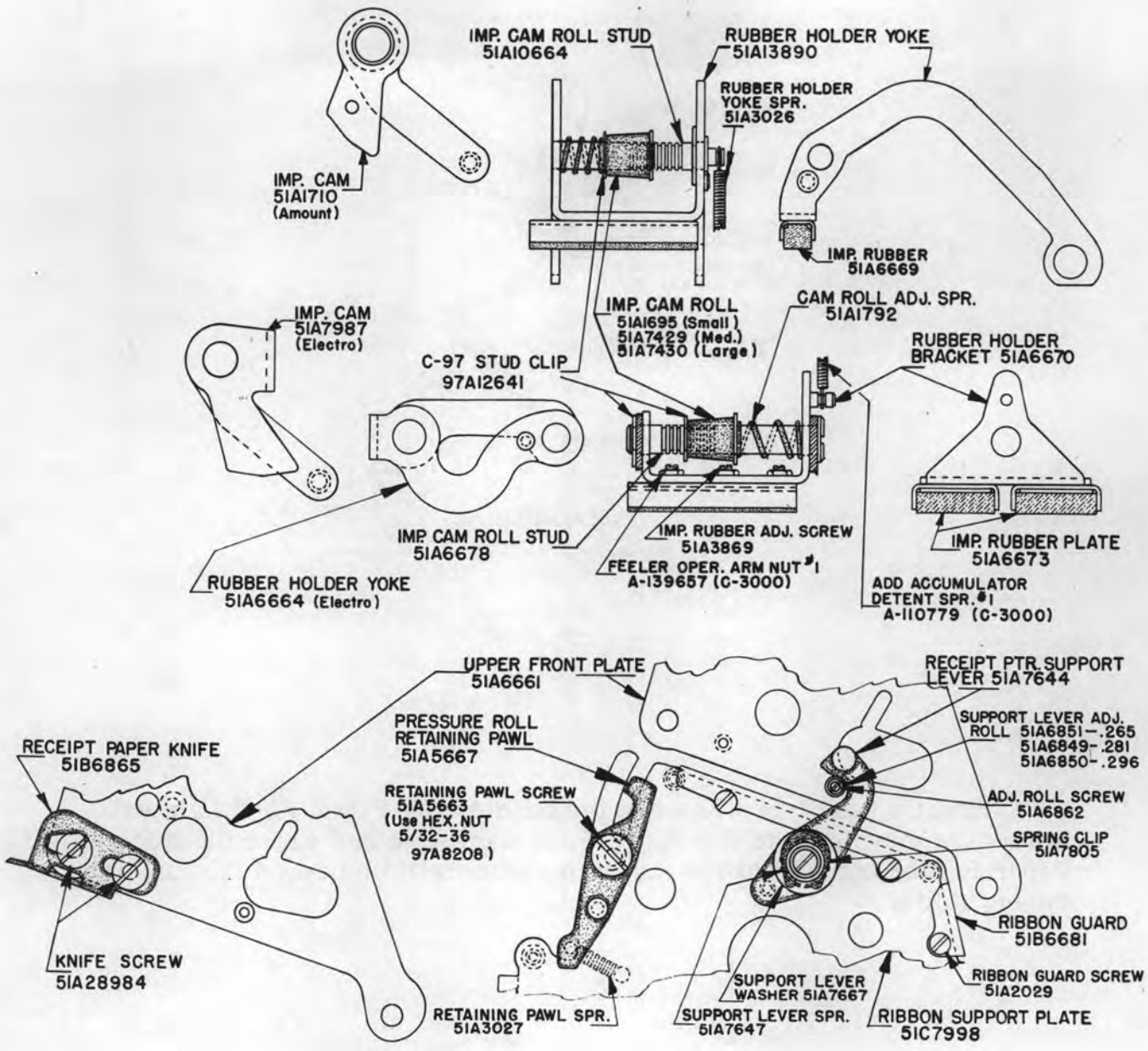
About 1-5/8, the high surface of the Impression Cam will contact the roll on the inside of the Impression Cam Arm and move it down in the back again. The amount in the Electro Impression will again be made on the Receipt.



Slightly past 1-5/8 turns of the handle, the Paper Feed Cam will again give movement to the Paper Feed Cam Arm and cause the Receipt Paper to feed out so that the last impression will be beyond the Receipt Paper Knife.

STUB RECEIPT MECHANISM (C-52)





STANDARD RECEIPT ADJUSTMENTS

Receipt Impression

The Impression on the Receipt may be adjusted by moving the Impression Cam Roll to the right or left. Three rolls are available to give a wide range of adjustment.

Receipt Tension

The Retaining Pawl Screw 51A5663 is an Eccentric and is used for adjusting the tension of the Receipt.

This Screw should be adjusted to give even tension on both Feed Rolls.

Receipt Printer Support Lever

This Lever is used to tie the upper and lower Printers together at the time the Receipt Impression is made. This is necessary to give an even print on both sides of the Receipt.

A roll should be selected which will properly tie the Printers together. If the roll selected is too large, it will be difficult for the operator to move the Lever when changing the Receipt Paper.

Receipt Feed - Long

The length of the Receipt on the long feed may be changed by the Consecutive Feed Adjusting Eccentric which is mounted on the inside of the Rack Transmission Frame.

After the adjustment is made, adjust the Receipt Paper Knife so that there will be an equal space above the top Electro Print and below the Lower Electro Print.

Receipt Feed - Item

The size of the Stop Link Roll will determine the space between Item Prints on the Receipt.

The following Rolls are available for this adjustment:

51A3998	Stop Link Roll	.235
51A3997	Stop Link Roll	.240
51A3996	Stop Link Roll	.245
51A1978	Stop Link Roll	.250
51A3995	Stop Link Roll	.255
51A3994	Stop Link Roll	.260
51A3993	Stop Link Roll	.265
51A3992	Stop Link Roll	.270
51A3991	Stop Link Roll	.275
51A6653	Stop Link Roll	.285
51A6654	Stop Link Roll	.290
51A6655	Stop Link Roll	.295
51A6656	Stop Link Roll	.300
51A15109	Stop Link Roll	.305
51A16417	Stop Link Roll	.310

After installing the larger roll on the Stop Link, operate the machine to be sure the Feed Link is not driven against the roll with pressure. If the Link is driven against the roll, a smaller roll may be placed on the Paper Feed Cam Arm.

The following Rolls are available:

51A2836	Paper Feed Cam Roll	.345
51A3843	Paper Feed Cam Roll	.343
51A3844	Paper Feed Cam Roll	.341
51A3845	Paper Feed Cam Roll	.339
51A3846	Paper Feed Cam Roll	.337
51A3847	Paper Feed Cam Roll	.335
51A34205	Paper Feed Cam Roll	
51A34206	Paper Feed Cam Roll	

STUB RECEIPT ADJUSTMENTS

Perforation

The Perforator Link Roll comes in various sizes to determine the depth of perforation of the Receipt Paper. The following rolls are available for this adjustment:

51A17674	Perforator Link Roll	.359
51A17675	Perforator Link Roll	.343
51A17676	Perforator Link Roll	.328
51A7681	Lifter Link Roll	.312
51A4365	Lifter Link Roll	.281
51A4362	Lifter Link Roll	.265
51A4361	Lifter Link Roll	.250
A216347	Release Link Roll #2 (C-100)	.295

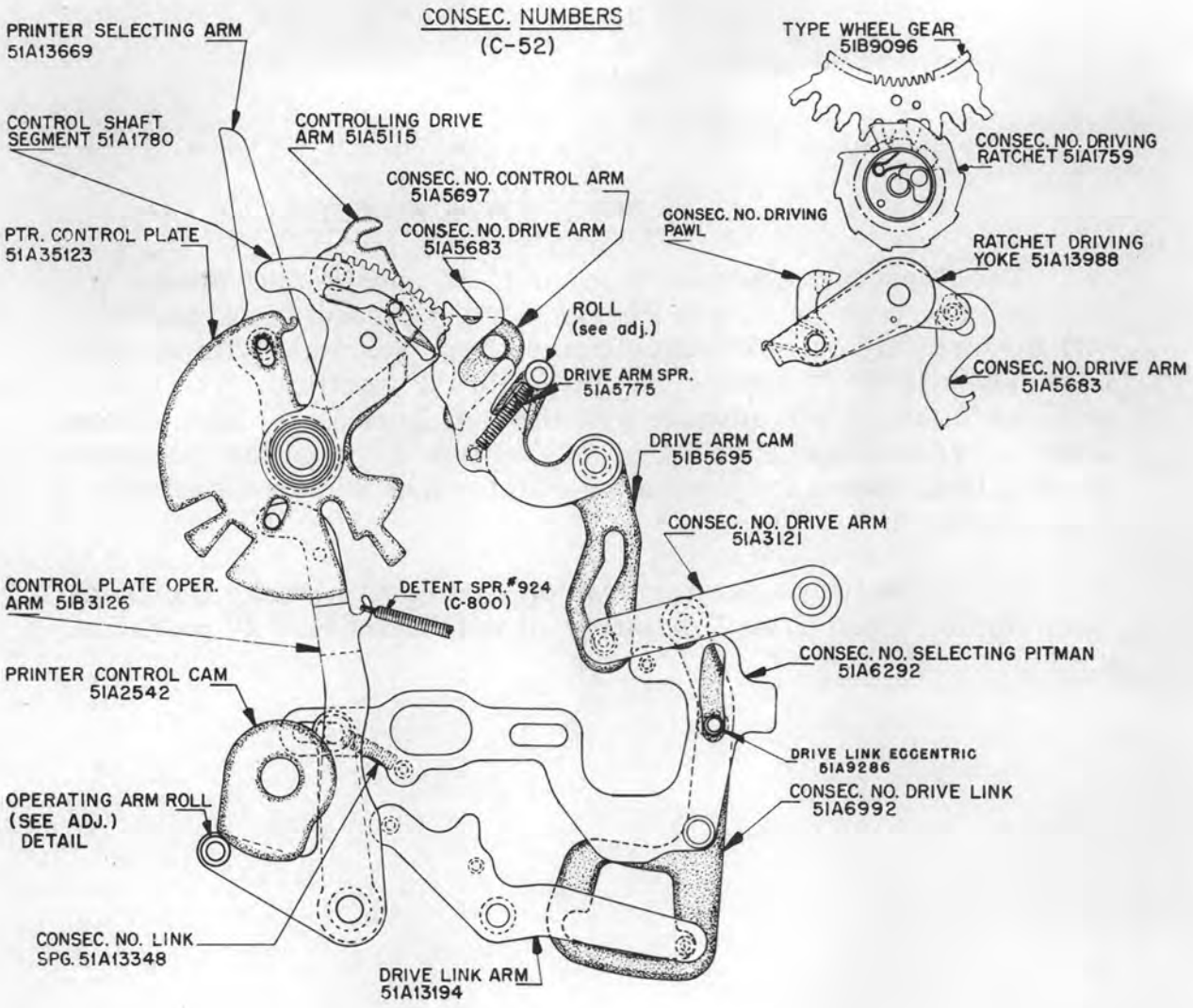
SECTION "O"

DATE AND CONS. NO'S.

CONSECUTIVE NUMBERS

The Consecutive Numbers on the C-52 consist four wheels. They print on both Detail and Receipt. The Consecutive Numbers will advance only on a "Change-Balance Due" operation with the Unit Lock Lever in the "Register" or "Read Row 2" position. The Consecutive Numbers will advance with the Unit Lock Lever in the "Read Group", "reset Reset Row 2-" or "Reset Row 2+" position unless the building instructions for the machine states that they be disabled in these positions.

The Consecutive Numbers can only be reset with the Unit Lock Lever in the "Read Group" or either of the "Reset Row 2" positions.



Item Operation

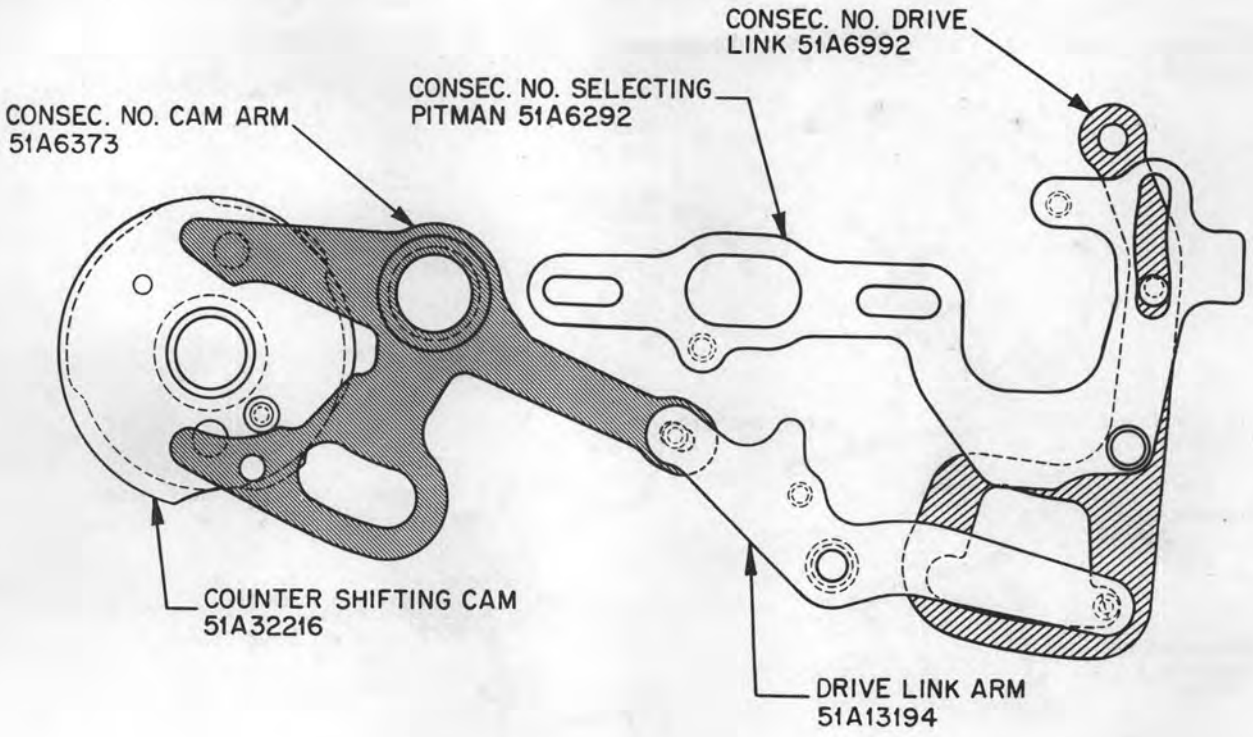
On an Item Operation the Printer Selecting Arm is stopped by the by the stud in the Printer Selecting Stop Arm 51A19906.

The right hand portion of the Control Plate Operating Arm, having a stud that extends through the Right Side Frame, moves the Consecutive Number Selecting Pitman 51A6292 to the back.

The Consecutive Number Drive Link 51A6992 will be moved bottom to the back. A cut out portion of the Link will be positioned above the stud in the Consecutive Number Drive Link 51A13194.

Between 1 and 1-1/4 turn of the handle, the roll and stud on the right side of the Counter Shifting Cam 51A32216 contacts the upper part of the Consecutive Number Cam Arm 51A6373 and moves it top to the back. The rear portion of the Drive Link Arm moves up and the stud in this part will ride up in the cut out portion of the Drive Link giving it no movement.

CONSECUTIVE NUMBER DRIVE
(C-52)


CONSEC. NO. DRIVE LINK 51A6992
CONSEC. NO. SELECTING PITMAN 51A6292
CONSEC. NO. CAM ARM 51A6373
COUNTER SHIFTING CAM 51A32216
DRIVE LINK ARM 51A13194

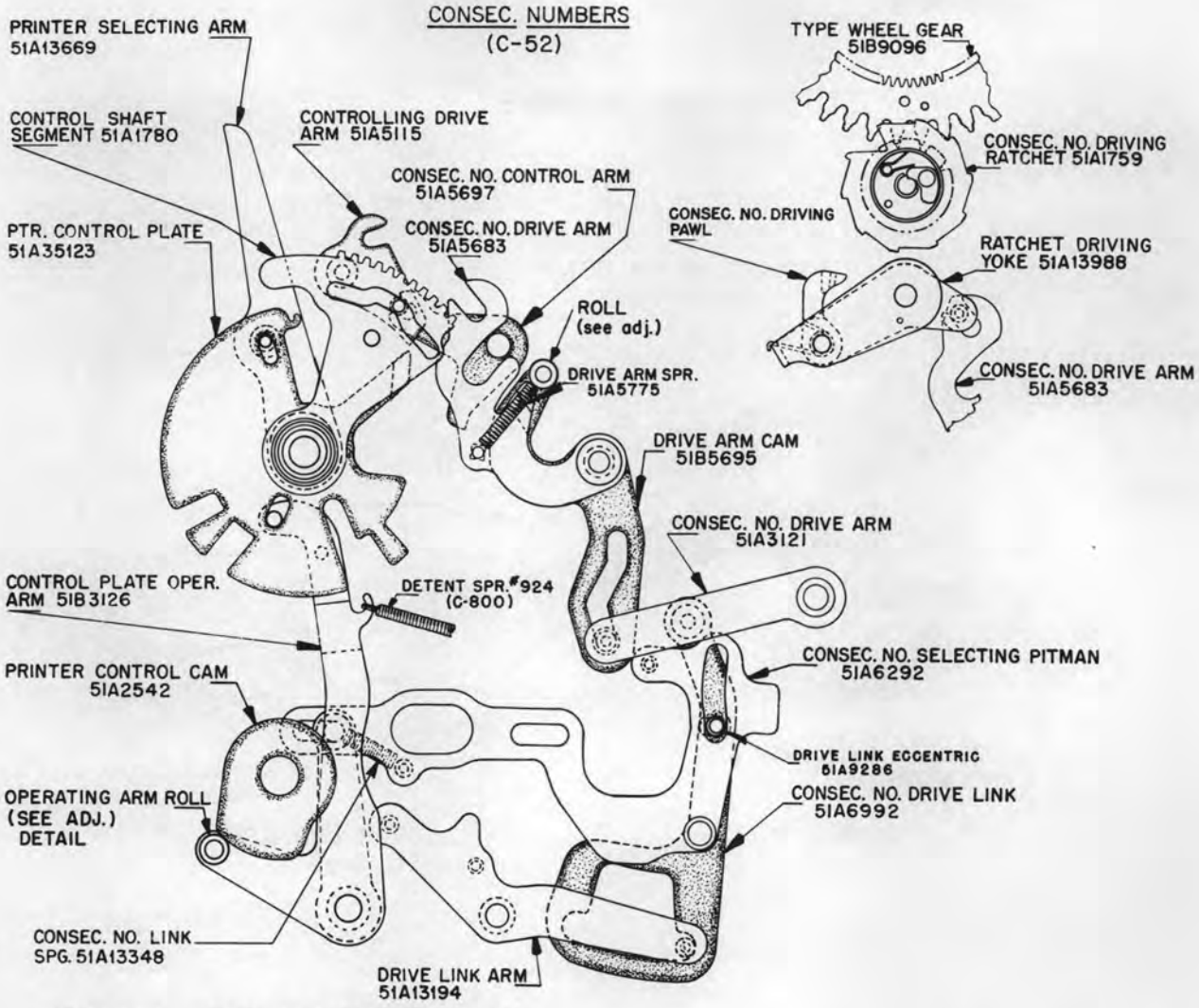
At 1-3/4 turn of the handle, when the Consecutive Number Selecting Pitman restores to the front, the Consecutive Number Drive Link will move bottom to the front and back step in the link will move over the stud in the Drive Link Arm.

Amount Tendered, Total and Tax Total Operations

On the above operations, the Printer Selecting Arm is stopped in the position corresponding to the key depressed except for the Amount Tendered operation. On this operation, the arm is stopped by the stud in the Printer Selecting Stop Arm 51A19904.

In any of these positions, the Consecutive Number Drive Link will be positioned so as to place a cut out portion over the stud in the Drive Link Arm.

Between 1 and 1-1/4 turns of the handle as the arm moves up in the back, the stud will move into the cut out portion of the Consecutive Number Drive Link and give it no movement. Therefore, the Consecutive numbers will not advance on any of these operations.



Change - Balance Due Operation

As the Change-Balance Due key is depressed its key pin will raise a stud in the Printer Selecting Stop Arm out of the path of the Printer Selecting Arm.

The Printer Selecting Arm will move top to the front until it is stopped by the key pin.

This allows the Consecutive Number Drive Link to be moved all the way bottom to the back. The front dwell in the link will be positioned over the stud in the Drive Link Arm 51A13194.

Between 1 and 1-1/4 turn of the handle as the Consecutive Number Cam Arm moved up in the front, the stud in the Drive Link Arm will move the Drive Link up.

The roll in the Consecutive Number Drive Arm 51A3121 will move up the raceway of the Drive Arm Cam 51A695 moving it bottom to the front.

Through the Drive Arm Spring, the Consecutive Number Drive Arm 51A5683 will be m oved top to the back.

The Ratchet Driving Yoke will be moved bottom to the back carrying the pawl over the teeth of the ratchet and cocking the Consecutive Number.

From 1-3/4 to 2 turns, the Drive Arm will be moved down and will move the Drive Arm Cam bottom to the back. The Drive Arm will move top to the front turning the Yoke bottom to the front and advancing the Consecutive Number.

"Read Group" - "Reset Row 2 +" and "Reset Row 2-"

When the Unit Lock Lever is moved to one of these positions a low part of the Control Shaft Segment will move the Controlling Drive Arm 51A5115 down in the path of the Printer Selecting Arm.

As the machine is operated the Printer Selecting Arm will receive only a slight movement. Only a slight movement will be given to the Drive Link 51A6992. This will leave the back dwell in the link over the stud in the Drive Link Arm 51A13194.

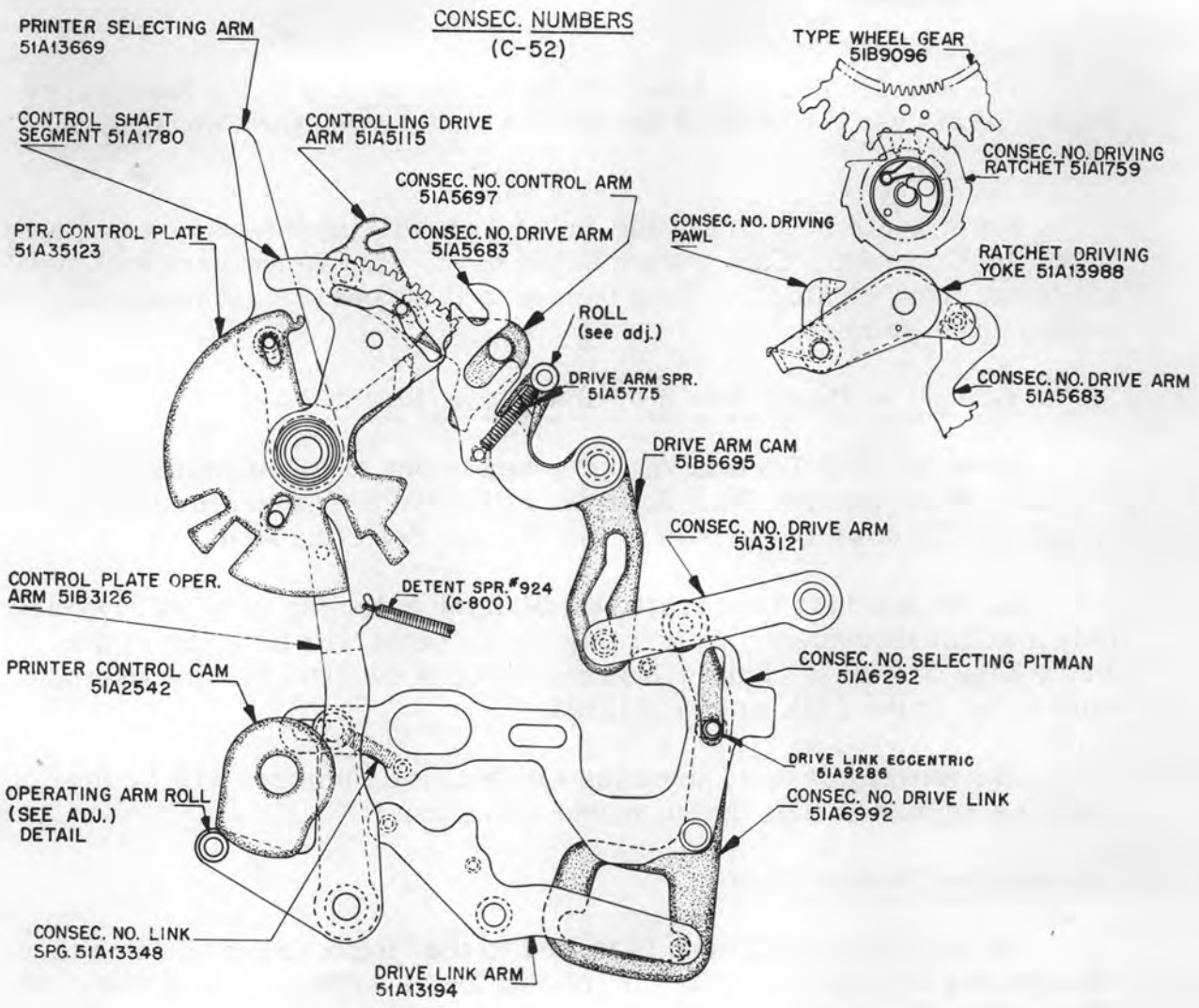
The movement to advance the Consecutive Numbers will be the same as for the Change-Balance Due operation.

Consecutive Number Reset

As the Unit Lock Lever is moved to the "Read Group" or to either "Reset Row 2" positions, the Controlling Drive Arm will be moved down. This will move the Control Lever Yoke 51A6703 top to the front. The Control Yoke 51A4347 and the Full Reset Liner will be moved down in the back. The liner will be moved out of the Full Reset Liner Disc.

As the Reset Knob is turned to reset the Consecutive Number, a spline cut in the Consecutive Number Shaft picks up the Ratchet Driving Gears, turning the gears, the typewheel gears and typewheels back to their zero position.

When the Consecutive Numbers are partially reset, the Unit Lock Lever should be moved back to the "register" position. This will move the Control Lever Yoke top to the back and the Control Yoke arm will be moved down in the front. The C-3000 Restoring Bar Spring will move the Full Reset Liner against the high part of the Liner Disc and will drop into the dwell of the disc as the Consecutive Numbers are fully reset. This stops the Consecutive Numbers at zeros.



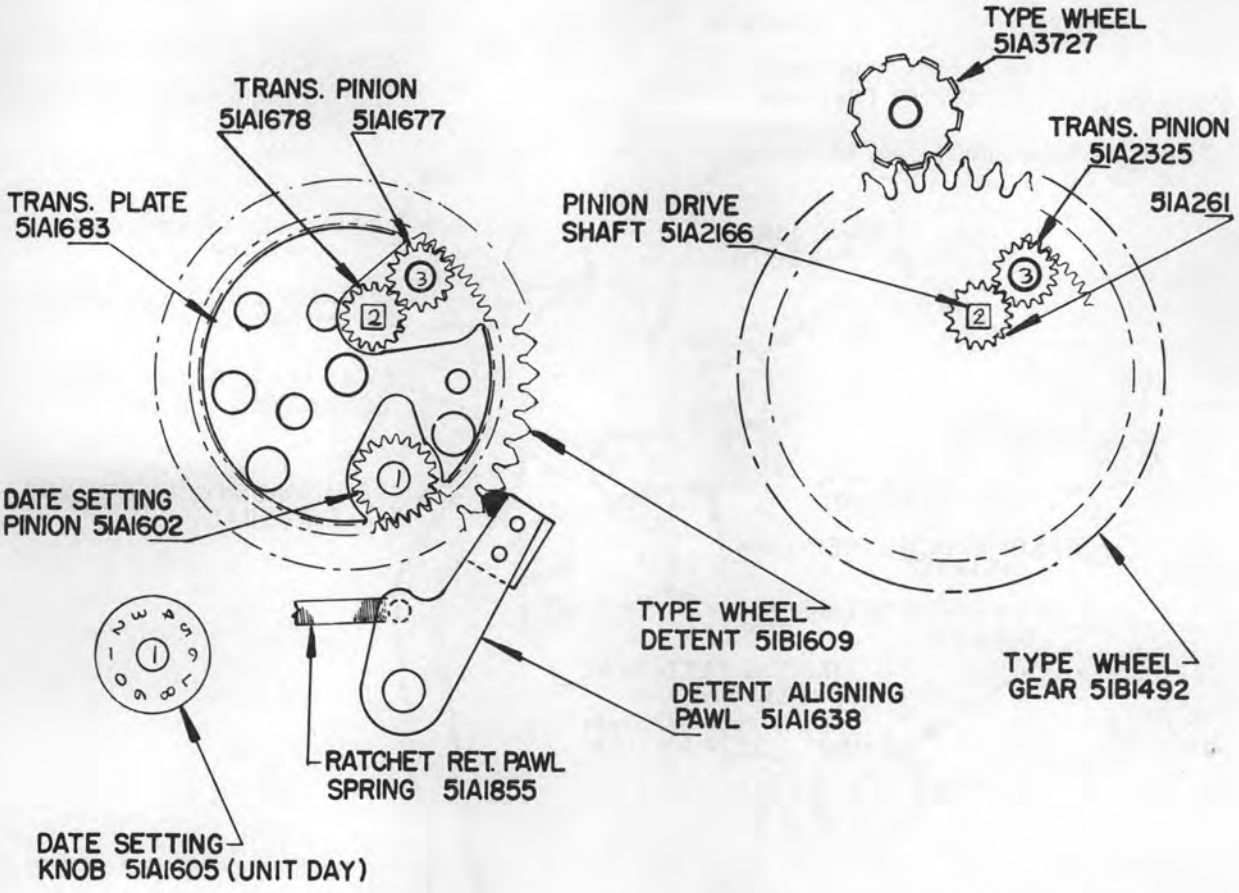
Consecutive Number Control Arm 51A5697

This arm is installed in machines where the Consecutive Numbers are not to advance with the Unit Lock Lever in the "read group" or either "Reset Row 2" positions.

When the Unit Lock Lever is to move to one of these positions, the Controlling Drive Arm is moved down in the back. The Control Arm 51A5697 is moved to the back and will be positioned above the square stud in the Consecutive Number Arm 51A5683.

As the machine is operated, the Drive Arm Cam 51A5695 is moved top to the back. The Drive Arm will be held down by the Control Arm and no movement will be given to the Ratchet Driving Yoke 51B13988.

DATE SETTING – UNIT DAY
(C-52)



DATE MECHANISM

Date Setting, Unit Day

As the Date Setting Knob is turned, the typewheel detent will be turned in the same direction. Through the Internal Pinions the Typewheel Gear 51B1492 will be turned and will position the typewheel.

The Detent Aligning Pawl insures that the typewheel will be fully positioned. This moves the Typewheel Gear 51B1492 in a position to accept the Transmission Liner 51A6676 as it moves in to align the typewheels.

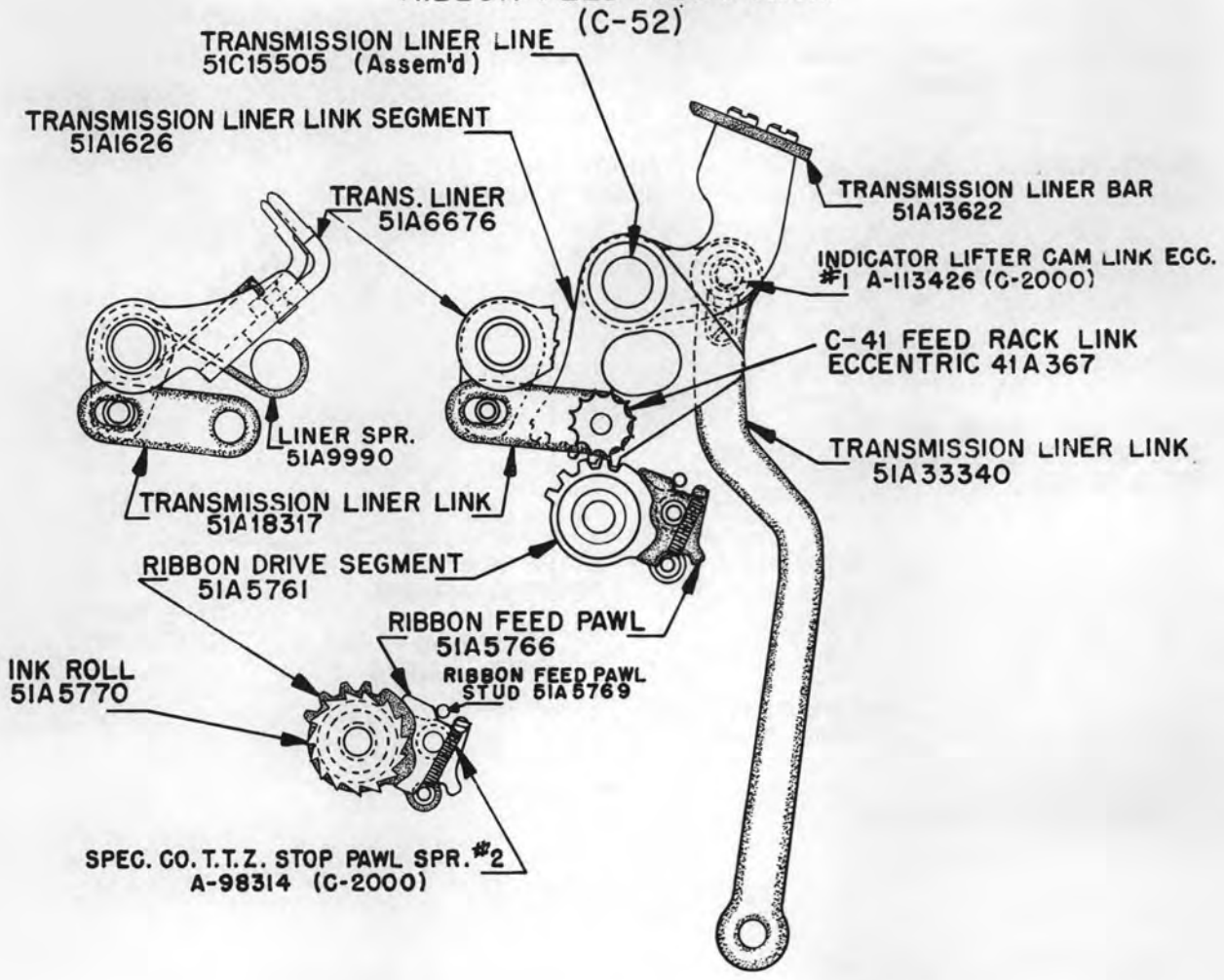
The Date Setting Mechanism for the tens of days and months is basically the same as for the unit days.

Year Wheel

A formed projection of the year wheel fits into a groove in the Typewheel Shaft. The Typewheel Shaft is retained in position by the Typewheel Liner Pawl.

The Year Wheel may be advanced by inserting a screwdriver into the slotted end of the shaft and turning it top to the back.

TRANSMISSION LINER-TYPE WHEEL LINER
RIBBON FEED MECHANISM
(C-52)



TRANSMISSION LINER 51A6676

At 1-1/4 turn of the handle as the Transmission Liner (machine) is carried into mesh the Transmission Liner Link Segment will be moved bottom to the back. The Transmission Liner Link will move the Transmission Liner 51A6676 bottom to the back bringing the Liner into mesh with the typewheels. The elongated hole in the front of the Liner Link allows the machine Transmission Liner to move into mesh slightly ahead of the Liner in the Printer.

Due to the difference in leverage of the liners, the Printer Liner moves in faster than the machine liner. Both Liners are moved approximately the same distance.

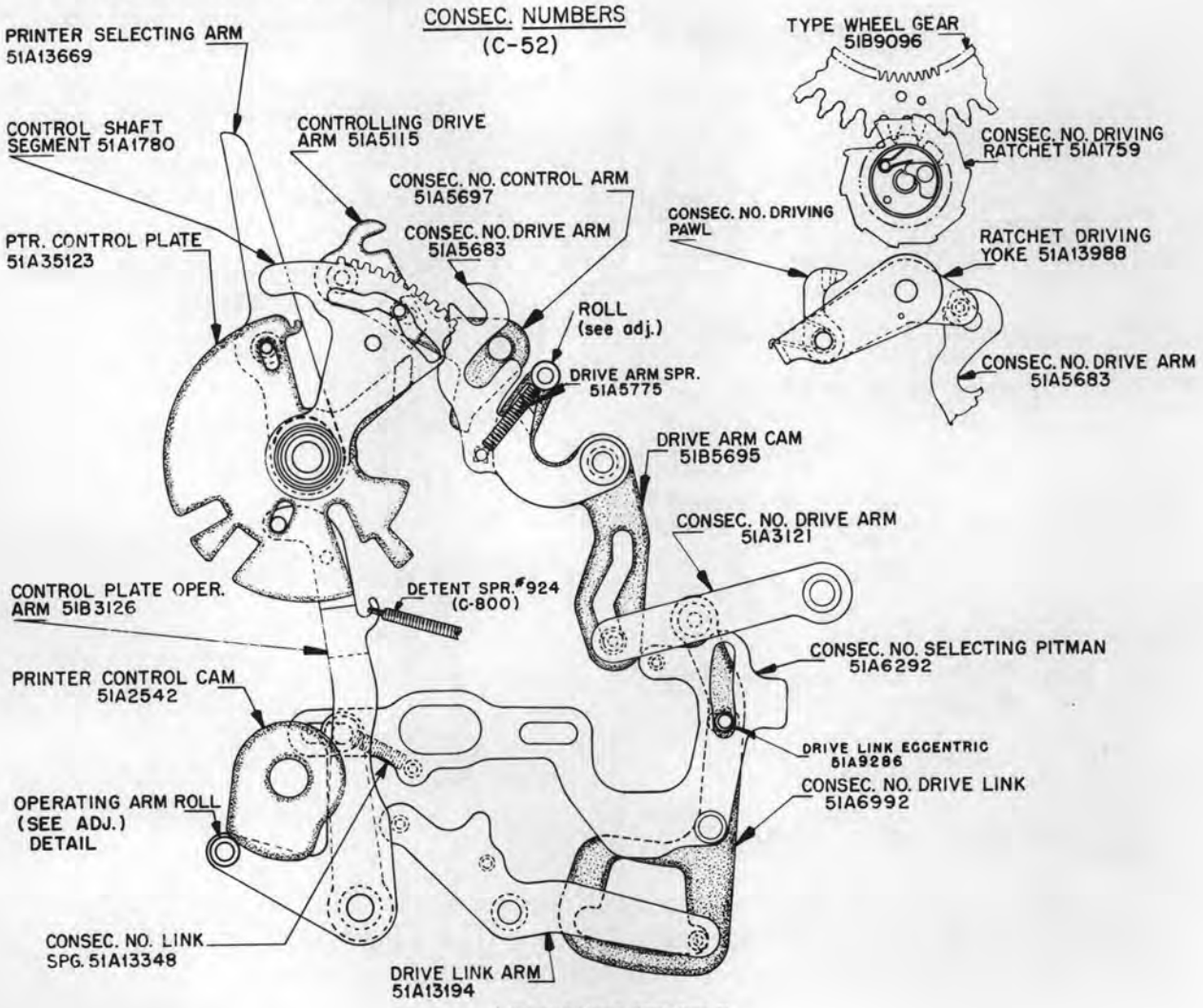
As the Transmission Liner (machine) is moved out of mesh, the Liner Link will move to the front and will start to move the Printer Liner to the back. The Liner Spring 51A9990 then moves the Liner out of mesh with the typewheel gears.

RIBBON FEED

As the Transmission Liner is carried into mesh, the Transmission Liner Link Segment is moved bottom to the front. The Ribbon Drive Segment 51A5761 will be turned top to the back and will move the Feed Pawls 51A5766 down. As the Feed Pawl moves away from the stud in the side frame, C-200 Special Counter T. T. Z. Stop Pawl Spring #2 moves the low part of the Pawl into the teeth of the ratchet on the Ink Roll 51A5770.

As further movement is given to the Feed Pawl, the ribbon will be spaced. The Pawl will be carried up as the liner is moved out of mesh and the pawl will back over the teeth of the Ratchet. The tension on the Ribbon prevents the Ink Roll from backing up as the pawl is restored.

As the Feed Pawl contacts the stud in the side frame, it is cammed bottom to the back away from the Ink Roll. This allows the ribbon to be easily removed and installed.



ADJUSTMENTS

Consecutive Number Selection

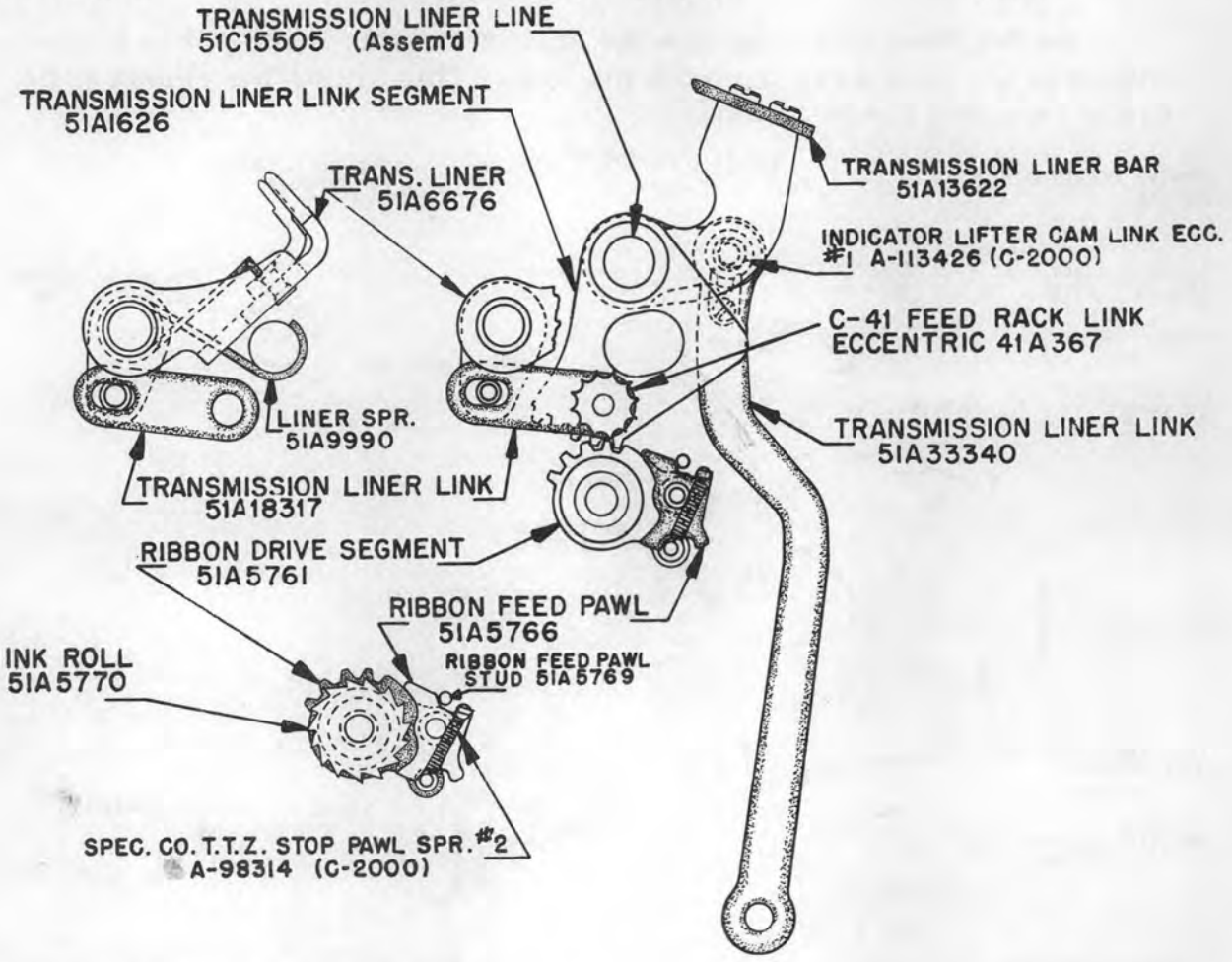
The Drive Link Eccentric must be adjusted so that on an Amount Tendered operation, the stud in the Drive Link Arm will have to cam into the opening in the link. This is necessary to insure a safe hold on the link when a "Read" or "Reset" operation is made.

Consecutive Number Feed

The roll on the Drive Arm Cam will determine the amount of cocking and feed given to the Consecutive Numbers. A roll should be selected which will give a safe lead both when cocking and feeding. A larger roll will give more lead when feeding but will not allow the yoke to cock as far.

The following rolls are available:

A-85155	C-2000 T. L. Restoring Ratchet Roll	.280
A-33987	C-1700 Cam Roll Selecting	.310
A-139748	C-2000 Link Roll #1	.247
A-155182	C-3000 Pinion Lock Roll	.294



Transmission Liner (Printer)

The C-41 Feed Rack Liner Link Eccentric is used to adjust the carry to the Printer Transmission Liner. The Liner must carry into the teeth of the typewheel gears far enough to align the type.

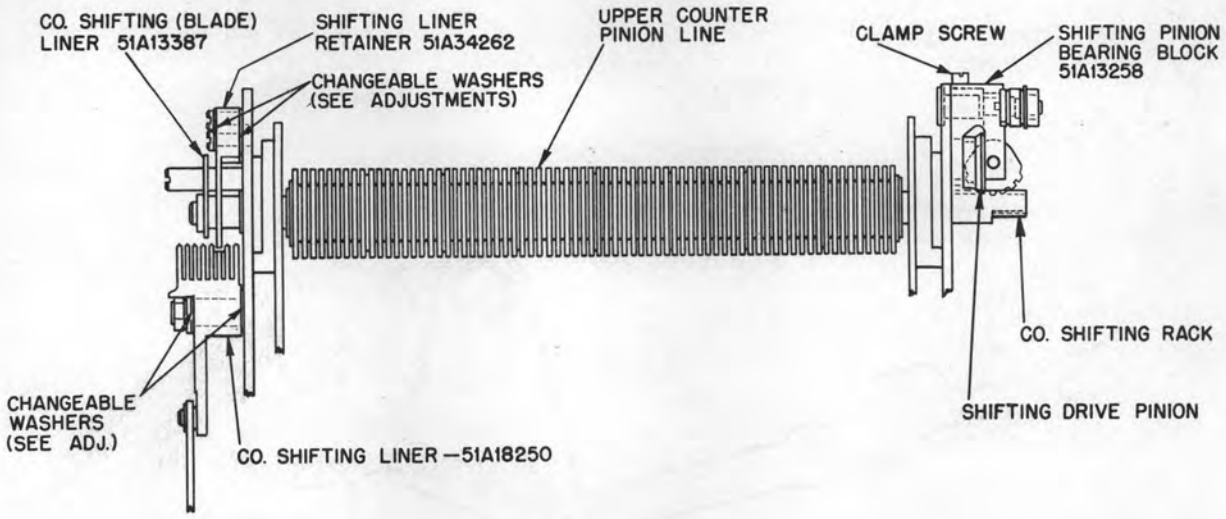
The Liner should be adjusted so it will move into mesh with the typewheel gears only far enough to align the typewheels.

The body transmission liner must be adjusted properly before attempting to adjust the Printer Transmission Liner 51A6676. (See adjustments in Transmission Section).

CLASS 52 17 TOTAL

SECTION "P"

UPPER COUNTER
(C-52)

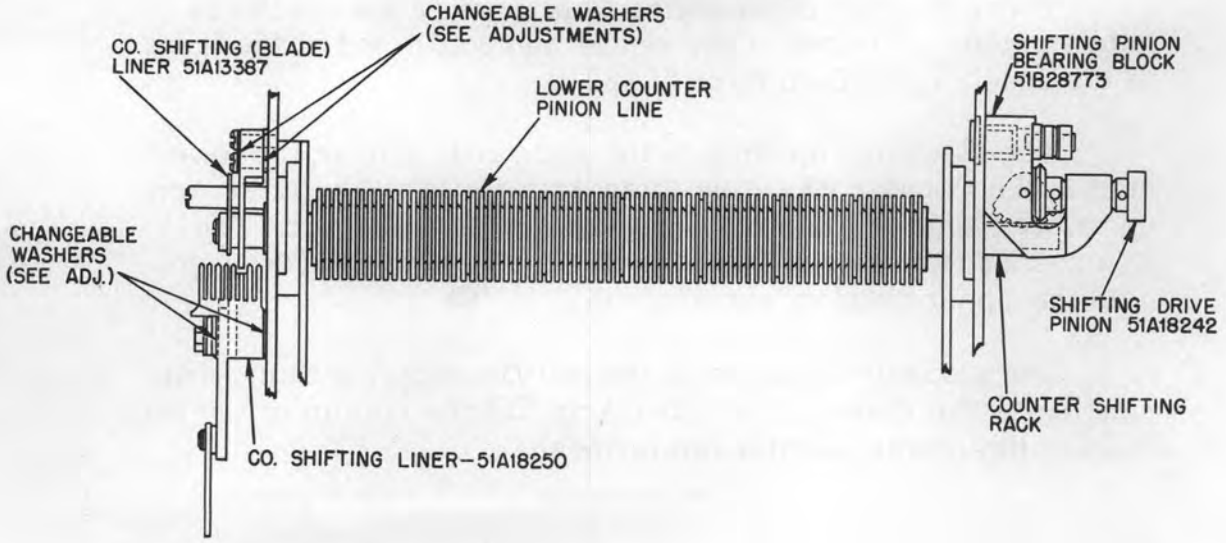


COUNTERS

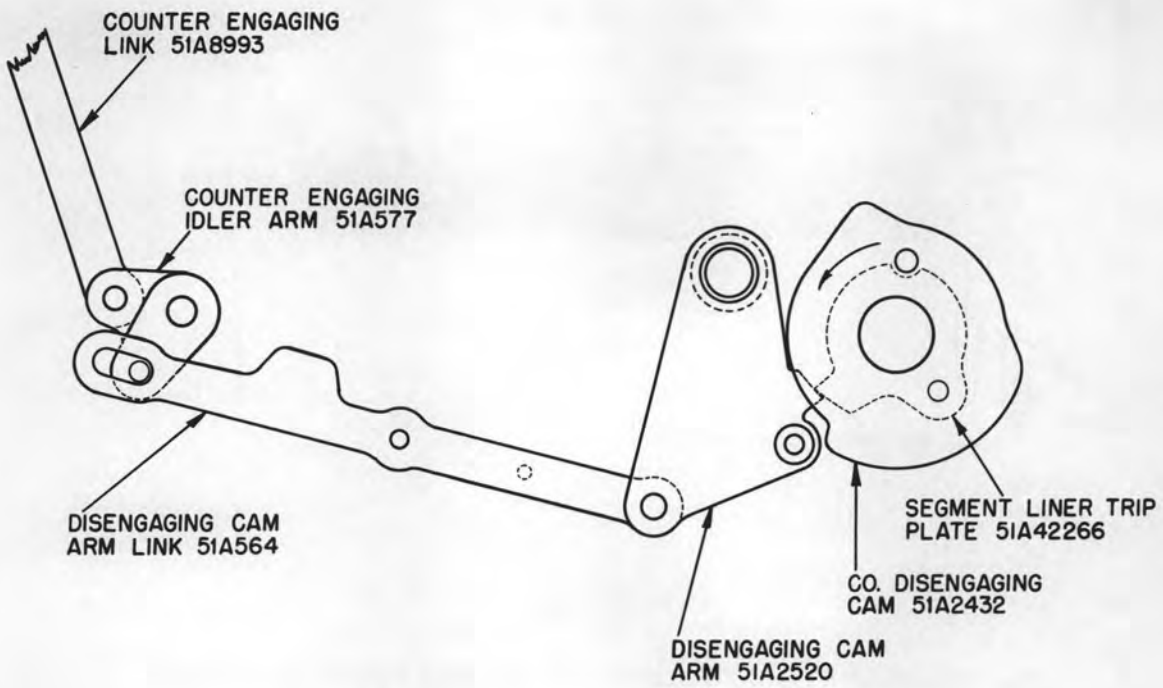
The Counter 51D8526 contains both the Upper and Lower Counter Units as well as the Transfer, Shifting and Engaging Mechanism. The Counter 51D8526 can be removed from the machine as a unit. The removal procedure will be given step by step later in this section.

Both the Upper and Lower Counter has eight groups of nine Pinions each which means, that there are nine totals in each Counter with each total having a capacity of $999,999.99.

LOWER COUNTER
(C-52)


CHANGEABLE WASHERS (SEE ADJUSTMENTS)
CO. SHIFTING (BLADE) LINER 51A13387
LOWER COUNTER PINION LINE
SHIFTING PINION BEARING BLOCK 51B28773
CHANGEABLE WASHERS (SEE ADJ.)
SHIFTING DRIVE PINION 51A18242
COUNTER SHIFTING RACK
CO. SHIFTING LINER—51A18250

COUNTER DISENGAGING MECHANISM
(HOME POSITION)
(C-52)



COUNTER ENGAGING

Disengaging for both the Upper and Lower Counters is controlled by the Counter Disengaging Cam 51A2429 pinned to the Main Cam Line.

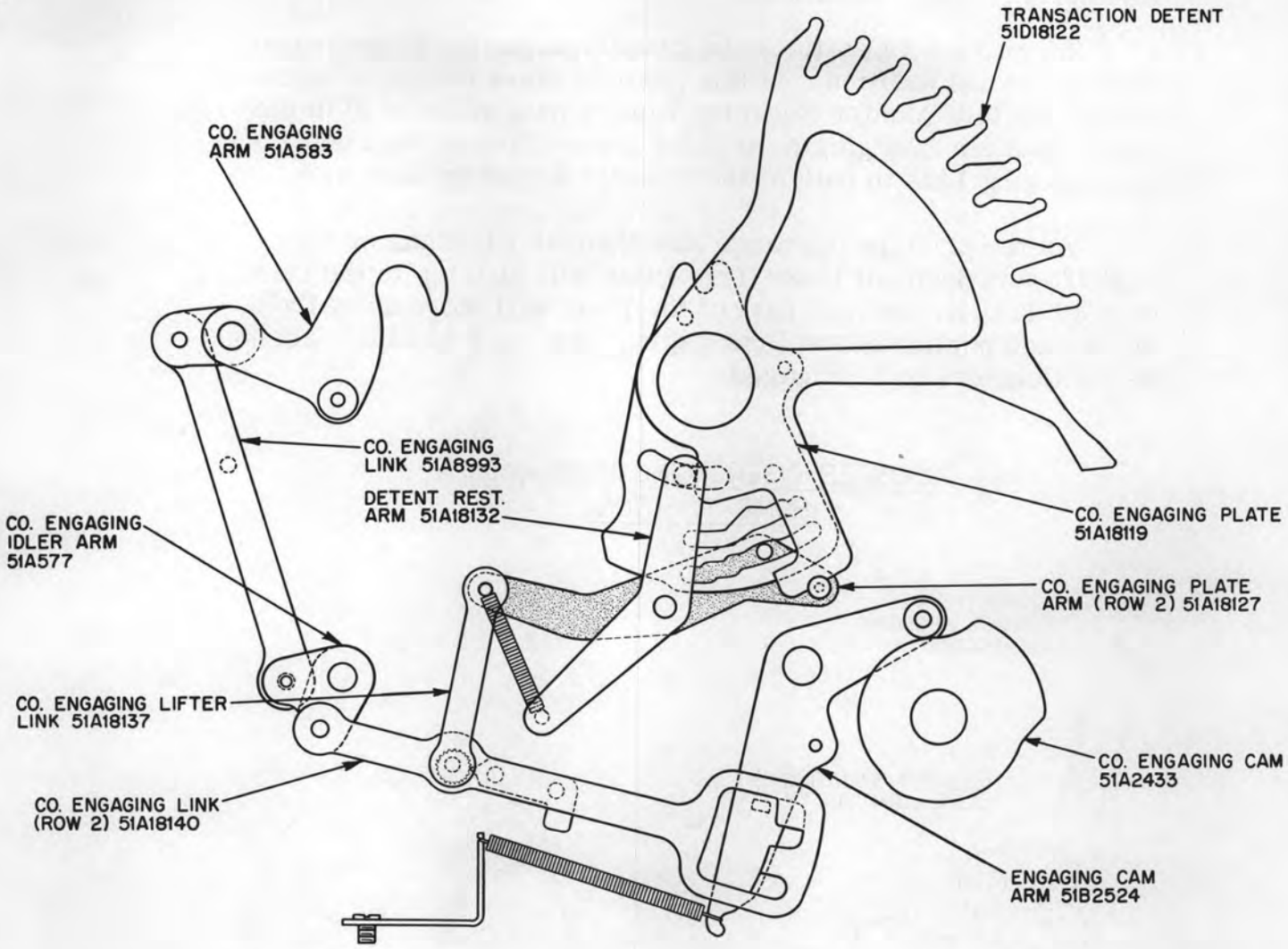
In the home position both Counters are held out of mesh by a high part of the Segment Liner Trip Plate, assembled to the Disengaging Cam, against a formed portion of the Disengaging Cam Arm 51A2520.

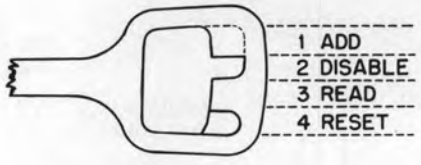
There are two Disengaging Cam Arm Links which are held together by a stud in the center and connected at the front to the Disengaging Cam Arm 51A2520.

The elongated opening in the right link is over the lower stud in the Counter Engaging Idler Arm, holding the Idler Arm up in back and the Counter Engaging Link 51A8993 up. The Counter Engaging Arm 51A583 will be held top to the front to hold the Upper Counter out of mesh.

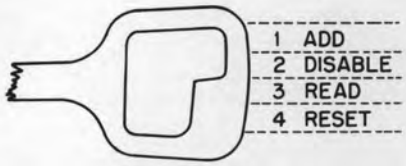
The elongated opening in the left Disengaging Cam Arm Link holds the Counter Engaging Arm 51A569 bottom to the back holding the Lower Counter out of mesh.

UPPER COUNTER ENGAGING (C-52)


TRANSACTION DETENT 51D18122
CO. ENGAGING ARM 51A583
CO. ENGAGING LINK 51A8993
DETENT REST. ARM 51A18132
CO. ENGAGING IDLER ARM 51A577
CO. ENGAGING PLATE 51A18119
CO. ENGAGING PLATE ARM (ROW 2) 51A18127
CO. ENGAGING LIFTER LINK 51A18137
CO. ENGAGING CAM 51A2433
CO. ENGAGING LINK (ROW 2) 51A18140
ENGAGING CAM ARM 51B2524



LEFT CO. ENGAGING LINK (ADD)



RIGHT CO. ENGAGING LINK (RESET)

UPPER COUNTER-ITEM OPERATION

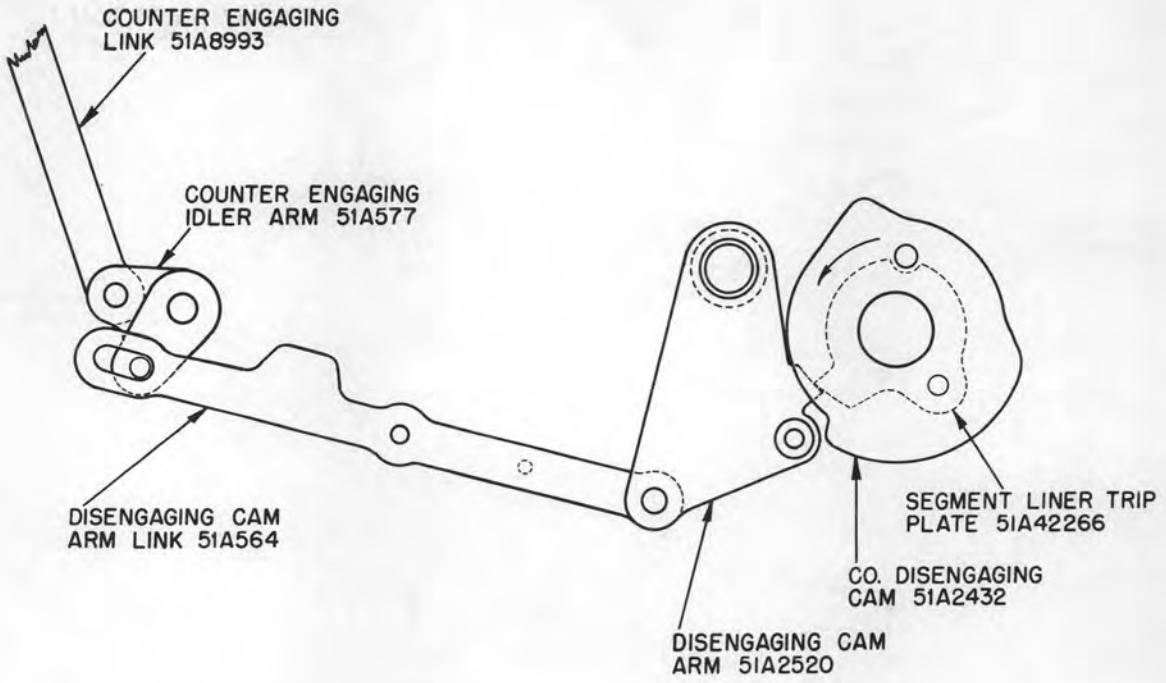
The two Counter Engaging Links furtherest to the right control the Upper Counter. These two links are held together by two studs and will be referred to as the Right and Left Counter Engaging Links for the Upper Counter.

There is a separate Counter Engaging Cam and Cam Arm for each Link. The Right Cam Arm and Link engage the Counter on "Reset" operations and the Left Counter Engaging Arm engages the Counter on "Add" operations.

On an Item Operation, the Counter Engaging Links remain down in the 1st position. In this position there will be a high surface of the left Counter Engaging Link in path of the stud in the "Add" Counter Engaging Arm and a low surface of the right Counter Engaging Link in path of the "Reset" Engaging Cam Arm.

As the machine operates, the Counter Disengaging Cam 51A2429 and Segment Liner Trip Plate will turn top to the back. At 1/16 T.O.H. the high part of the Plate will move away from the formed portion of the Disengaging Cam Arm 51A2520 freeing up the Counters to be engaged.

COUNTER DISENGAGING MECHANISM
(HOME POSITION)
(C-52)


COUNTER ENGAGING LINK 51A8993
COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51A564
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

Between home and 1/8 T.O.H., the "Reset" Counter Engaging Cam Arm 51B2524 is carried bottom to the front by a high part of the "Reset" Counter Engaging Cam. However, since there is a low surface of the right Counter Engaging Link in path of the stud in the Counter Engaging Cam Arm, the Counter Engaging Links will not receive any movement and the upper Counter will remain out of mesh.

At 1/2 T.O.H. the high part of the Counter Engaging Cam moves away from the roll on the "Reset" Counter Engaging Arm and spring tension will restore this arm.

Also at 1/2 T.O.H. the 1st high part of the Counter Disengaging Cam Arm will contact the roll on the Disengaging Cam Arm and botton the elongations of the Disengaging Cam Arm Links on the studs in the Idler Arm and Counter Engaging Arm.

Just before 3/4 T.O.H. the high part of the Counter Disengaging Cam will move away from the roll on the Counter Disengaging Cam Arm freeing up the Counters to be engaged.

Also at this time, the "Add" Counter Engaging Cam will carry the "Add" Counter Engaging Cam Arm bottom to the front and the stud in this arm will contact the high surface of the Left Counter Engaging Link carrying it to the front and turning the Counter Engaging Idler Arm top to the back.

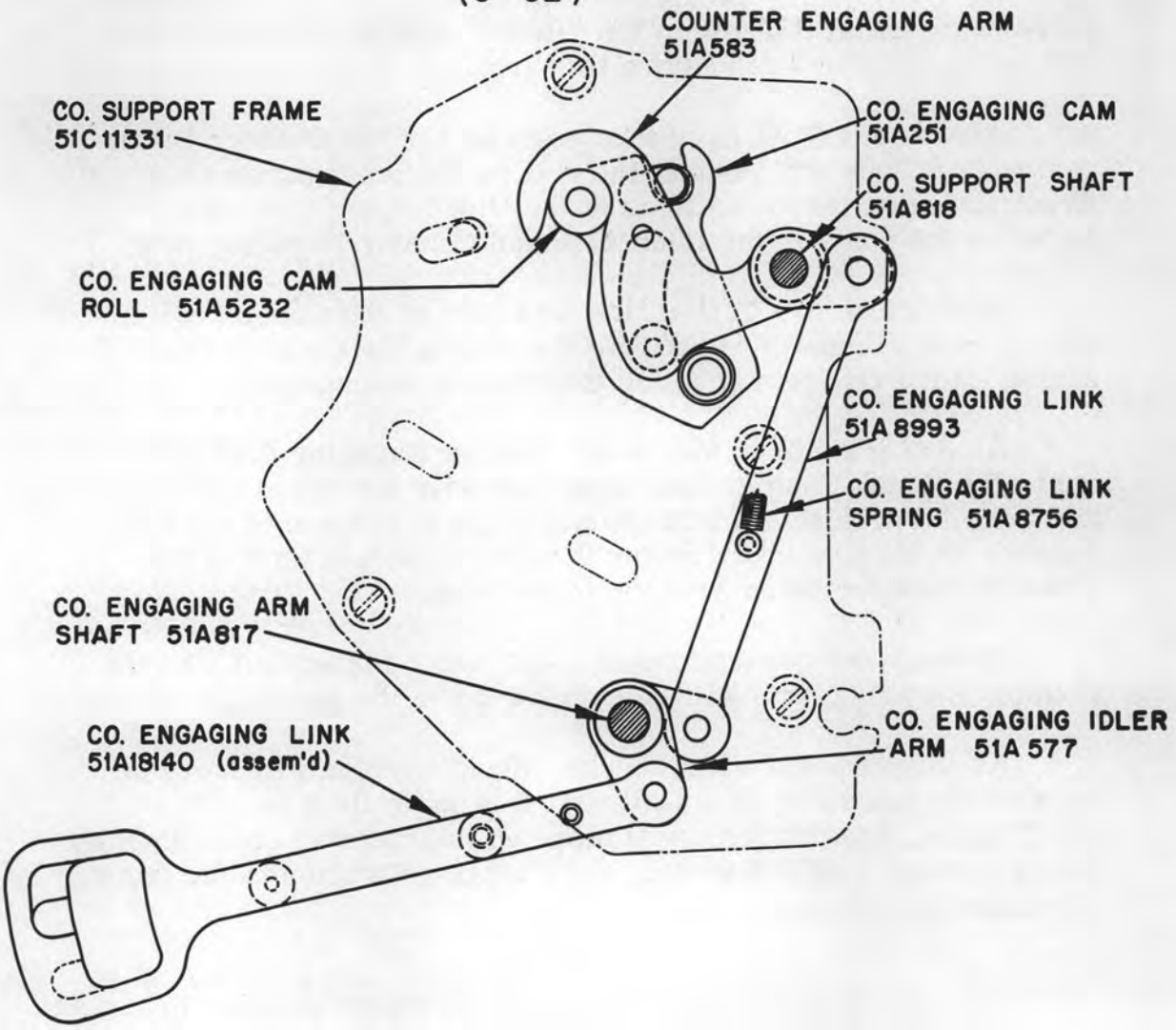
Through the connections of the Counter Engaging Links the Counter Engaging Arm will be carried top to the back.

As this arm moves back, the "Hook" portion will move off the Counter Engaging Cam Roll. At this same time the Roll on the Counter Engaging Arm will move up the raceway of the Counter Engaging Cam 51B2168 forcing the Engaging Cam top to the front to engage the Counter.

At 1-1/4 T.O.H. the high part of the "Add" Counter Engaging Cam will move away from the Roll on the Counter Engaging Arm and spring tension will restore this arm. At the same time, the high part of the Counter Disengaging Cam will carry the Disengaging Cam Arm Links back to disengage the Counter.

UPPER COUNTER

ROW 2
(C-52)



ENGAGING

With the Counter Engaging Arm down in front, the "Hook" of the Arm is over the Counter Engaging Cam Roll 51A5232, holding the Counter Engaging Cam and the Counter Engaging Shaft 51A251 top to the back.

The Counter Engaging Cam Shaft Assembly 51A251 consists of the Cam Shaft and two arms that yoke hubs on each side of the Upper Counter Unit. This arrangement gives even carry to the Upper Counter in and out of mesh.

As the Counter Engaging Arm is moved up in front, the Roll in the Arm will ride up the raceway of the Cam. As soon as the "Hook" in the Arm is away from the Counter Engaging Cam Roll, the roll in the arm will move the Cam Arm top to the front, moving the Counter to the front to engage the Segments.

When the Counter is fully in mesh the Counter Stop Arms 51A8974 (left) and 51A8972 (right) will come against the Counter Stop Rolls, stopping the Counter to prevent meshing too deep with the Segments.

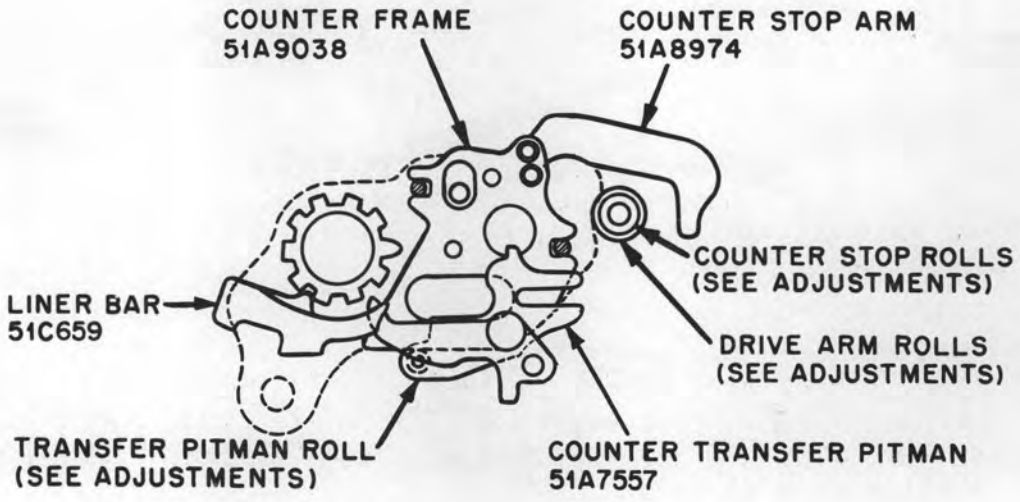
The Roll on the Counter Engaging Arm 51A583 will then move into the neutral part of the raceway in the Counter Engaging Cam.

As the Counter Engaging Arm moves down to disengage the Counter, the Roll on the Arm moves into the working part of the raceway, in the Counter Engaging Cam, moving the Cam top to the back to disengage the Counter.

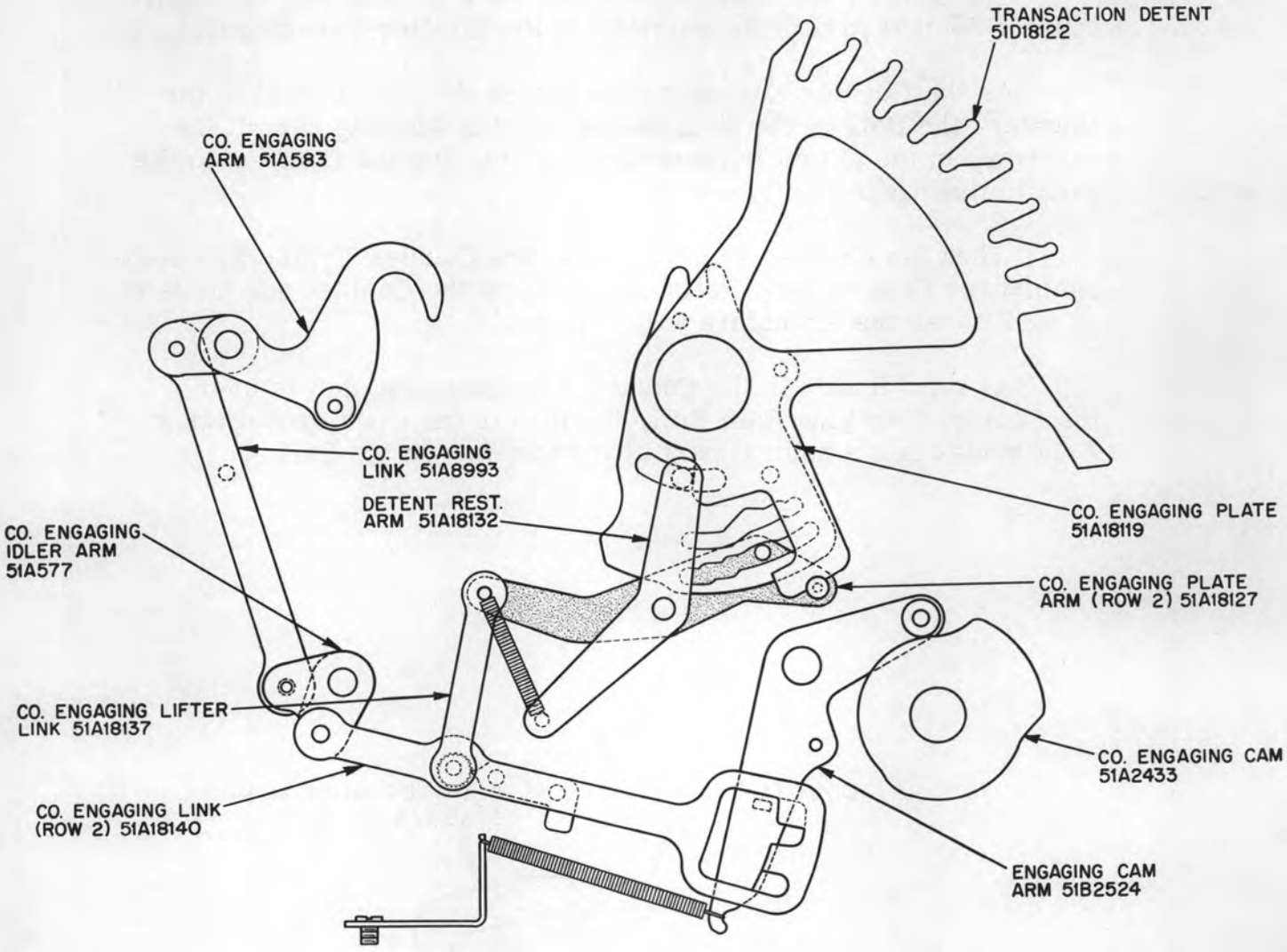
When the Counter is out of mesh, the Counter Frame will come against the Counter Stop Rolls. This stops the Counter and holds it in position so the Transfers will restore.

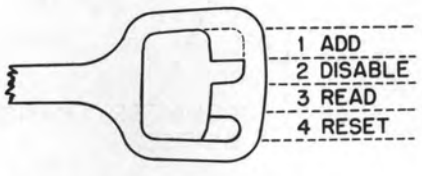
As the "Hook" on the Counter Engaging Arm moves over the Counter Engaging Cam Roll, the Roll in the Counter Engaging Arm moves into a neutral part of the raceway in the Cam.

(C-52)

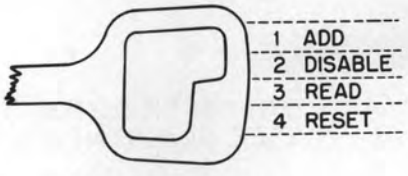


UPPER COUNTER ENGAGING (C-52)





LEFT CO. ENGAGING LINK
(ADD)



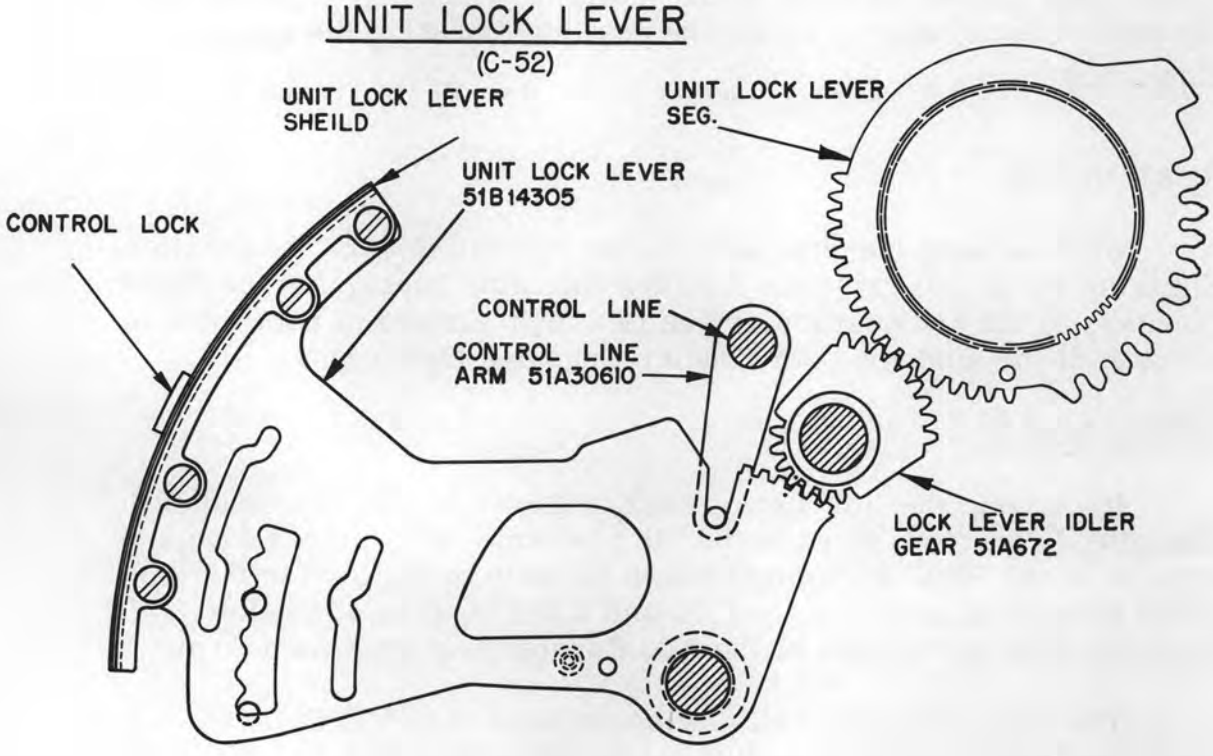
RIGHT CO. ENGAGING LINK
(RESET)

TOTAL OPERATION

When a Row 1 key is pressed, the Key Pin will contact the camming surface of the Transaction Detent 51D18122 carrying it down in front. The bottom of the detent will move to the back and cam the Counter Engaging Plate Arm (Row 2) down in front. The back of this arm will move up and through the Counter Engaging Lifter Link will lift the Counter Engaging Links up one position placing low surfaces in the path of the studs on both Counter Engaging Cam Arms to disable the Upper Counter.

Also as the Transaction Detent moves, the back of the Detent will contact a stud in the Detent Restoring Arm and cam it down in back, increasing spring tension between this arm and the two Counter Engaging Plate Arms.

This spring tension is used to restore the Transaction Detent when the key is released at the end of the operation.



READ AND RESET ROW 1

When the unit lock lever is moved to the Read or Reset Row 1 position, the Upper Counter Engaging Links will be raised one position to disable Upper Counter Engaging.

As the Unit Lock Lever is moved down, it will carry the Control Line Arm, pined to the Control Line, bottom to the front and turn the Control Line top to the back.

The Counter Control Plate arm, pinned to the Right End of the Control Line, will also be carried bottom to the front and through the yoking connection to the Counter Engaging Plate 51A18119, will carry the plate bottom to the back.

As the Counter Engaging Plate moves bottom to the back, the Lower Raceway will cam the Engaging Plate Arm, for the Upper Counter, down in front. The back of this arm will move up and through the Counter Engaging Lifter Links, raise the Upper Counter Engaging Links up one position to disable the Counter.

LOCK REGISTER POSITION

When the Unit Lock Lever is moved to the Lock Register Position the Control Line will be turned top to the front which will carry the Counter Engaging Plate 51A18119 bottom to the front. The bottom raceway in the Engaging Plate will raise the Upper Counter Engaging Links one position disabling the Upper Counter.

READ ROW 2

When moving the Unit Lock Lever to Read Row 2, the Counter Engaging Plate will raise the Counter Engaging Links, for the Upper Counter, to the 3rd position, there is a high surface of both links in the path of the studs on both Counter Engaging Cam Arms.

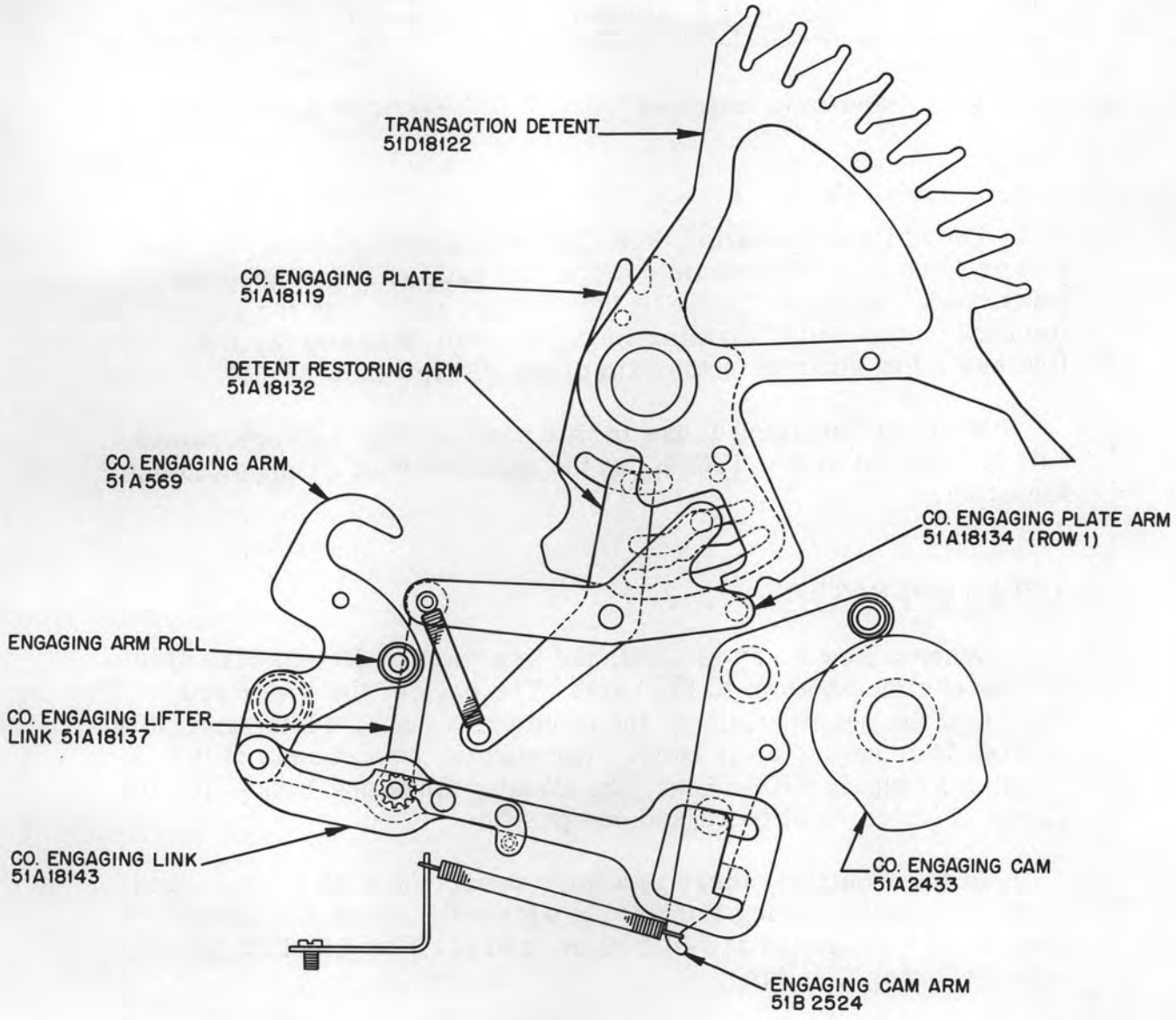
RESET ROW 2

By moving the Unit Lock Lever to Reset Row 2, the Counter Engaging Links are raised to the 4th position. This places a high surface of the Right Engaging Link in the path of the Stud in the Reset Counter Engaging Cam Arm and a low surface of the Left Engaging Link in the path of the Add Counter Engaging Cam Arm.

The Upper Counter will now be engaged at 1/8 T.O.H. to reset the Upper Counter but will not be engaged at 3/4 T.O.H..

LOWER COUNTER ENGAGING

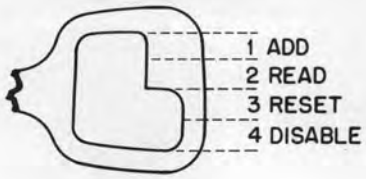
C-52



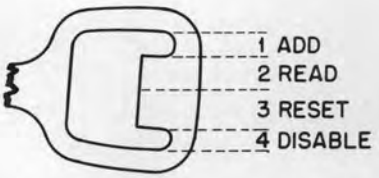
LOWER COUNTER ENGAGING

ITEM OPERATION

The two Counter Engaging Links for the lower counter are located just to the left of the Upper Counter Engaging Links. There is a Counter Engaging Cam Arm for each of these links with the Right Cam Arm being the "Add" Arm and the left arm the "Reset" Cam Arm.



RIGHT CO. ENGAGING LINK
(ADD)



LEFT CO. ENGAGING LINK
(RESET)

On an Item Operation, the Counter Engaging Links, for the Lower Counter, will remain down in the 1st position. With the links down, the Right Link will have a high surface in the path of the stud on the "Add" Counter Engaging Cam Arm and the left link has a low surface in the path of the "Reset"Cam Arm.

With the Engaging Links in this position, the Lower Counter will be engaged at 3/4 T.O.H. in the same manner as upper Counter Engaging.

TOTAL OPERATION

When a Row 1 key is used, the Transaction Detent 51D18122 will be cammed bottom to the back. The back of the lower projection of the detent will cam the Counter Engaging Plate Arm (Row 1) down in front and up in back. Through the connections of the Counter Engaging Lifter Link, the Counter Engaging Links, for the Lower Counter, will be raised one position.

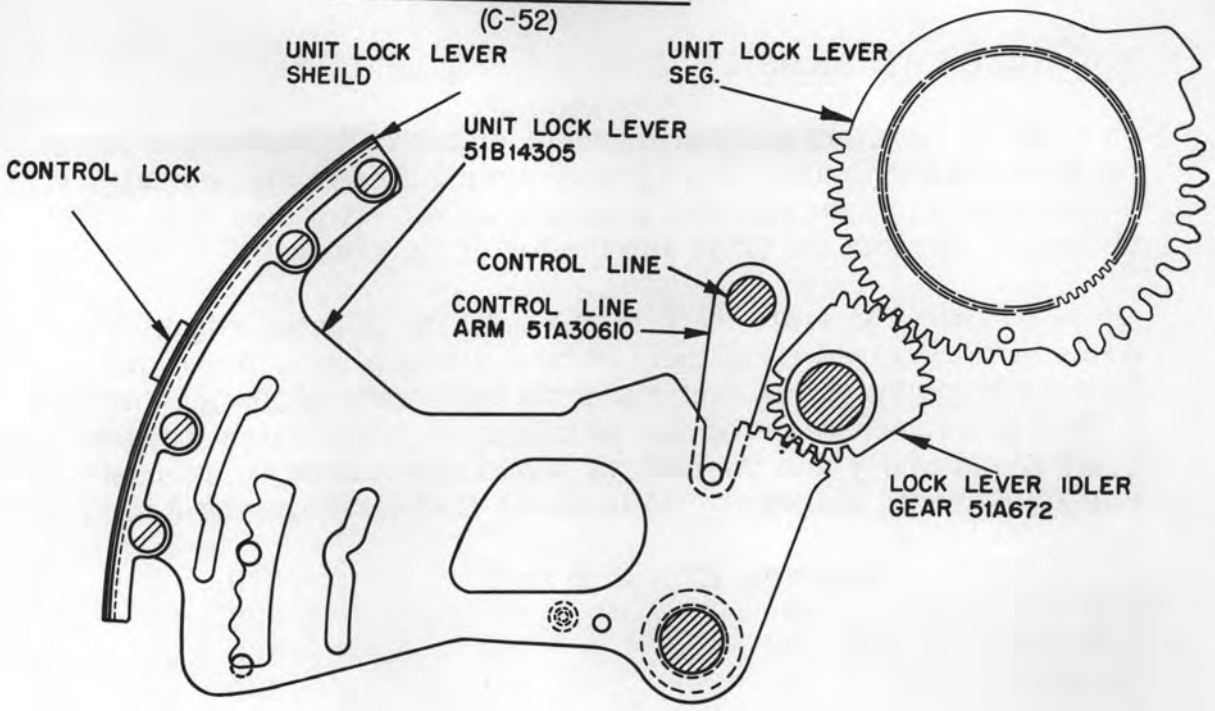
In this position, there is a high surface on both links in path of the Counter Engaging Cam Arms which will cause the Lower Counter to be engaged at 1/8 T.O.H. and again at 3/4 T.O.H. to read the lower Counter.

READ ROW 1

When the Unit Lock Lever is moved to the Read Row 1 position, the Counter Engaging Plate will be carried bottom to the back. The camming surface of the center raceway will cam the Counter Engaging Plate Arm (Row 1) down in front and up in back and raise the Counter Engaging Links one position to read the Lower Counter.

UNIT LOCK LEVER

(C-52)



RESET ROW 1

When the Unit Lock Lever is moved to the Reset Row 1 position, the Counter Engaging Links will receive an additional one position movement up. In this position there is a high surface in the path of the Left Counter Engaging Arm and a low surface in the path of the Right Counter Engaging Arm.

The Counter will now be engaged at 1/8 T.O.H. to reset the Totals.

LOCK REGISTER

With the Unit Lock Lever in the Lock Register position, the Lower Counter Engaging Links are raised to the 2nd position which is read

READ AND RESET ROW 2

With the Unit Lock Lever in Read or Reset Row 2, the Lower Counter Engaging Links are raised to the 4th position to disable the Lower Counter. In this position both Engaging Links have low surfaces in the path of the Counter Engaging Cam Arms.

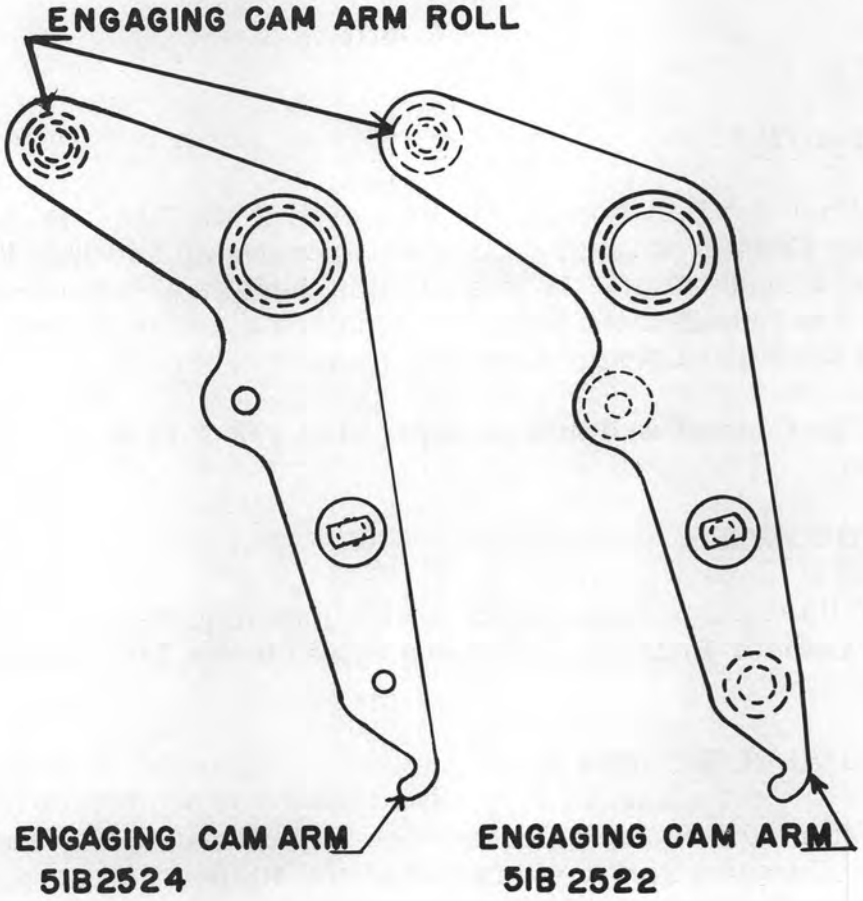
ADJUSTMENTS

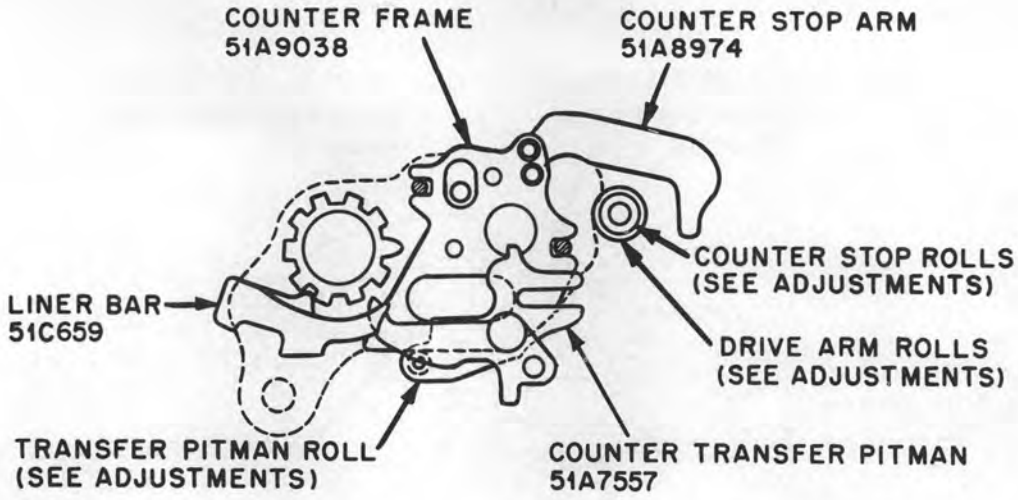
ENGAGING CAM ARMS

When the Counters are engaged, on both Add and Reset Timing, the Rolls on the Counter Engaging Arms must be in the neutral part of the raceway in the Counter Engaging Cams, with less than .050" clearance between the Rolls and the top of the raceways.

To check, operate the machine until the Counter Engaging Arms have received all of their carry. Using pliers, move the Counter Engaging Arms back and forth and watch the Pinion Liners. If the Liners receive movement at this time, it indicates that the Rolls are not fully into the neutral part of the raceway. To make this adjustment, change the Rolls on the Counter Engaging Arms.

51A8210	Engaging Cam Arm Roll	.370
51A8109	" " " "	.390
51A8209	" " " "	.360
51A8211	" " " "	.380
51A8320	" " " "	.350





DEPTH OF MESH

After installing the proper size rolls on the Engaging Cam Arms, check for proper depth of mesh.

LOWER COUNTER

With 9's on the Itemizer, remove the "In" Stop Rolls and Key Banks. Operate machine until the Differential Segments are up the bank. Stop operation before Clutch Pinions mesh with Differential Segments.

Checking each bank, move the Differential Segments up and down. There should be no (bony) action. Also while moving Segments, watch the Pinion Liners for movement. If the liners move, the long tooth is nipping the Liner which indicates that the counter is not far enough in mesh.

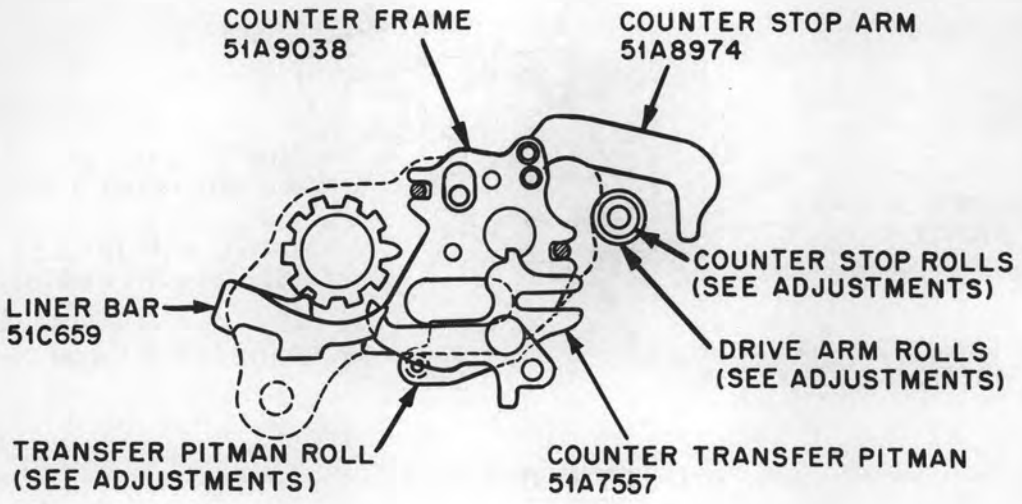
If (bony) action occurs, the Counters are too deep in mesh.

To adjust for meshing too deep, (bony) use a smaller roll on the Counter Engaging Arm.

To obtain deeper mesh, use a larger Roll on the Counter Engaging Arm.

To check the Upper Counter, add all 9's to one of the Totals and then move the Unit Lock Lever to read Row 2. Select the Total that contains the 9's and with the "In" Stop Rolls and Key Banks removed, test and adjust the Upper Counter the same as the Lower Counter.

(C-52)



After depth of mesh has been adjusted properly, "In" Stop Rolls should be used that will turn by finger pressure with the Counters engaged.

51A9567	Counter Stop Roll	.335
51A9568	" " "	.340
51A9569	" " "	.345
51A9346	" " "	.330
51A10092	" " "	.350
51A11825	" " "	.355
51A18539	" " "	.324
51A14212	" " "	.361

COUNTER ENGAGING LIFTING LINKS

With the Unit Lock Lever in Register, trip the machine using a Total Key. Check the play in each Counter Engaging Plate Arm. The play should be very slight. If the Engaging Plate Arms are either tight or have excessive play, replace the bottom rolls with one of the rolls listed below.

51A26647	Counter Engaging Arm Roll	.156
51A26650	Counter Engaging Arm Roll	.166

Move Unit Lock Lever to Read Row 2 and operate machine until the Lower Counter "Reset" Counter Engaging Arm moves to the front (1/8 T.O.H.). Check clearance between top of Engaging Arm Stud and high surface of Counter Engaging Link, should not exceed .003.

Operate machine to 3/4 T.O.H. and make same check on "add" Counter Engaging Cam Arm. Clearance should not exceed .003.

Use Eccentric in bottom of Counter Engaging Lifter Link to make this adjustment.

Move Unit Lock Lever to Read Row 1 and adjust Counter Engaging Links for Upper Counter using same test as for Lower Counter.

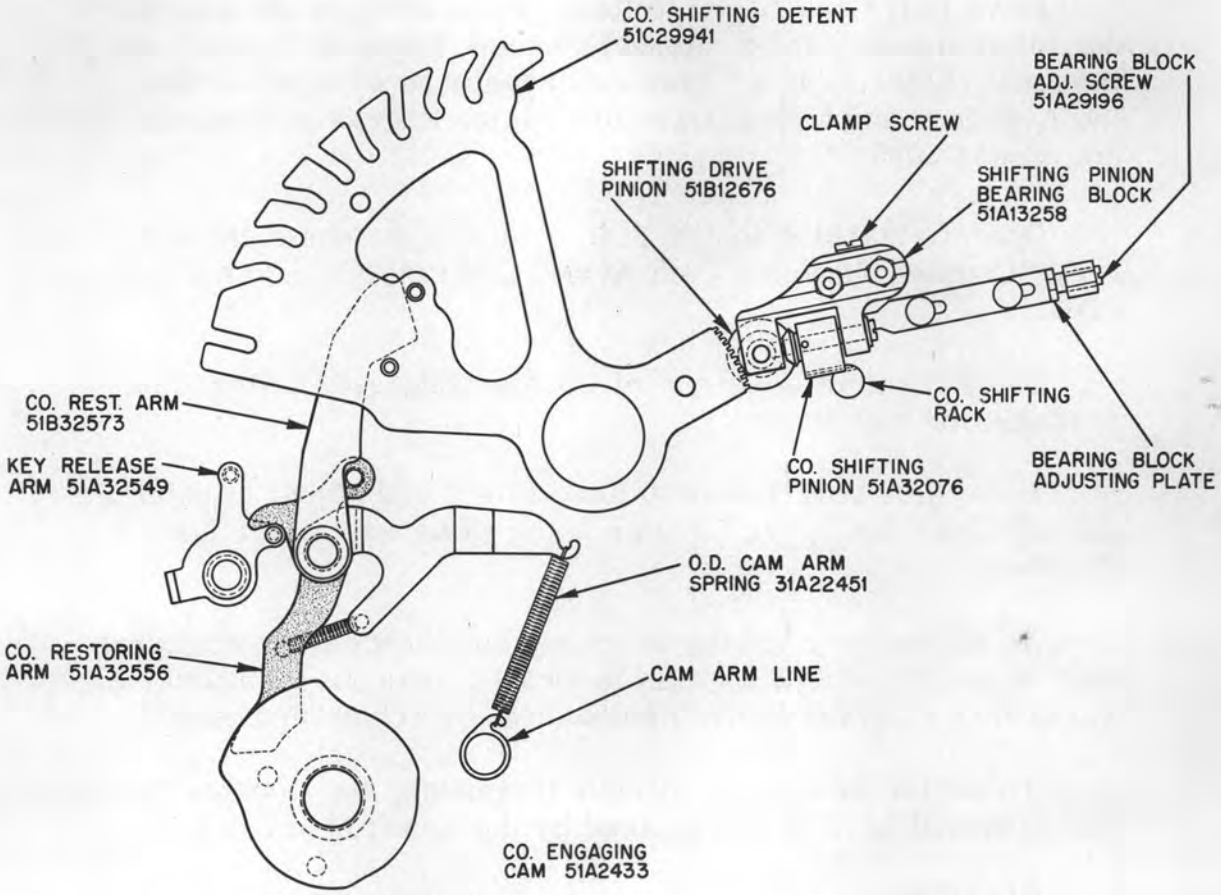
To adjust for meshing too deep, use the Counter Engaging Roll 51A36055 - .3688. This is smaller than the standard roll (51A10519 - .3745) that is placed on the machine in assembly.

To adjust the Counter deeper into mesh, the Counter Engaging Arm will have to be replaced by the arm listed below.

51A36793	Counter Engaging Arm (upper counter)
51A32558	Counter Engaging Arm (lower counter)

The Rolls on these arms are located further from center which will give more movement to the Counter Engaging Cam.

UPPER COUNTER SHIFTING
(C-52)



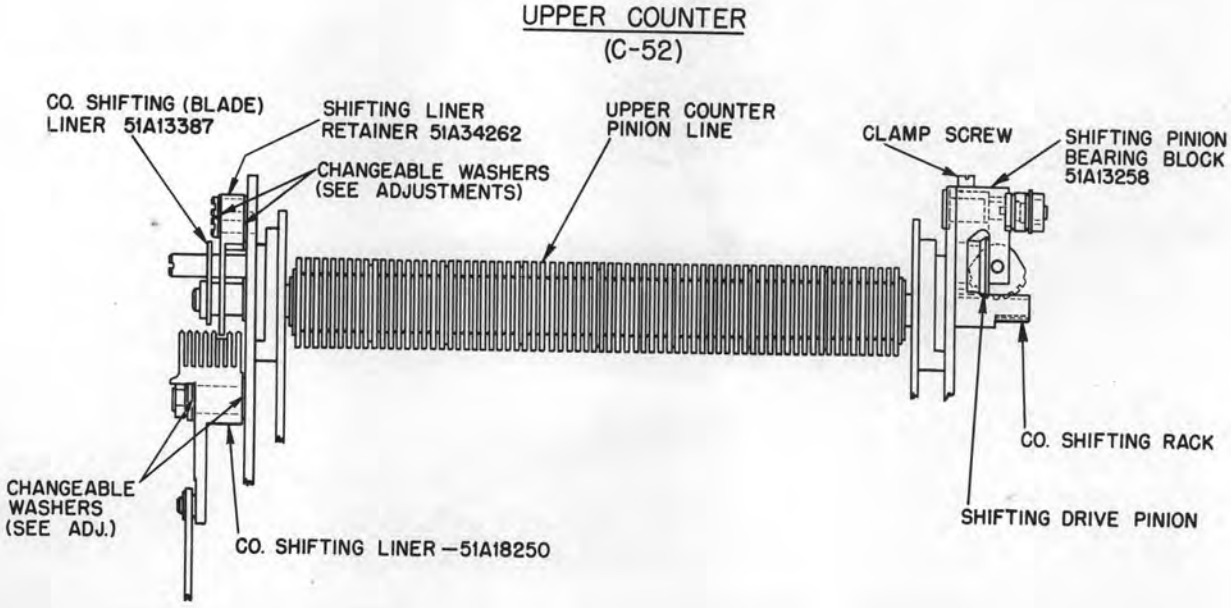
UPPER COUNTER

The Upper Counter is shifted manually by Keys in Row 2.

The top four keys in Row 2 shift the Counter to the left and the next four keys shift the Counter to the right. The bottom key does not shift the Counter. The Total for this key represents the home position of the Counter.

When one of the top four keys in Row 2, is used, the key pin will cam the Counter Shifting Detent 51C29941 top to the back. As the detent moves up in front, the bottom front roll will cam the Counter Restoring Arm 51A32573 top to the front and up in back stretching the spring attached to the back of this arm.

The teeth on the back of the Detent are in mesh with the Shifting Drive Pinion located in the Shifting Bearing Block 51A13258. The Shifting Drive Pinion will turn top to the front of the machine and being in mesh with the Counter Shifting Pinion will turn it bottom to the left. The Counter Shifting Pinion is meshed with the Co. Shifting Rack which is screwed into the Counter Pinion Tube. The Co. Shifting Rack will be carried to the left, moving the Counter Pinion Tube and Pinions to the left. The amount of movement given the Counter is determined by the camming surface of the Counter Shifting Detent.

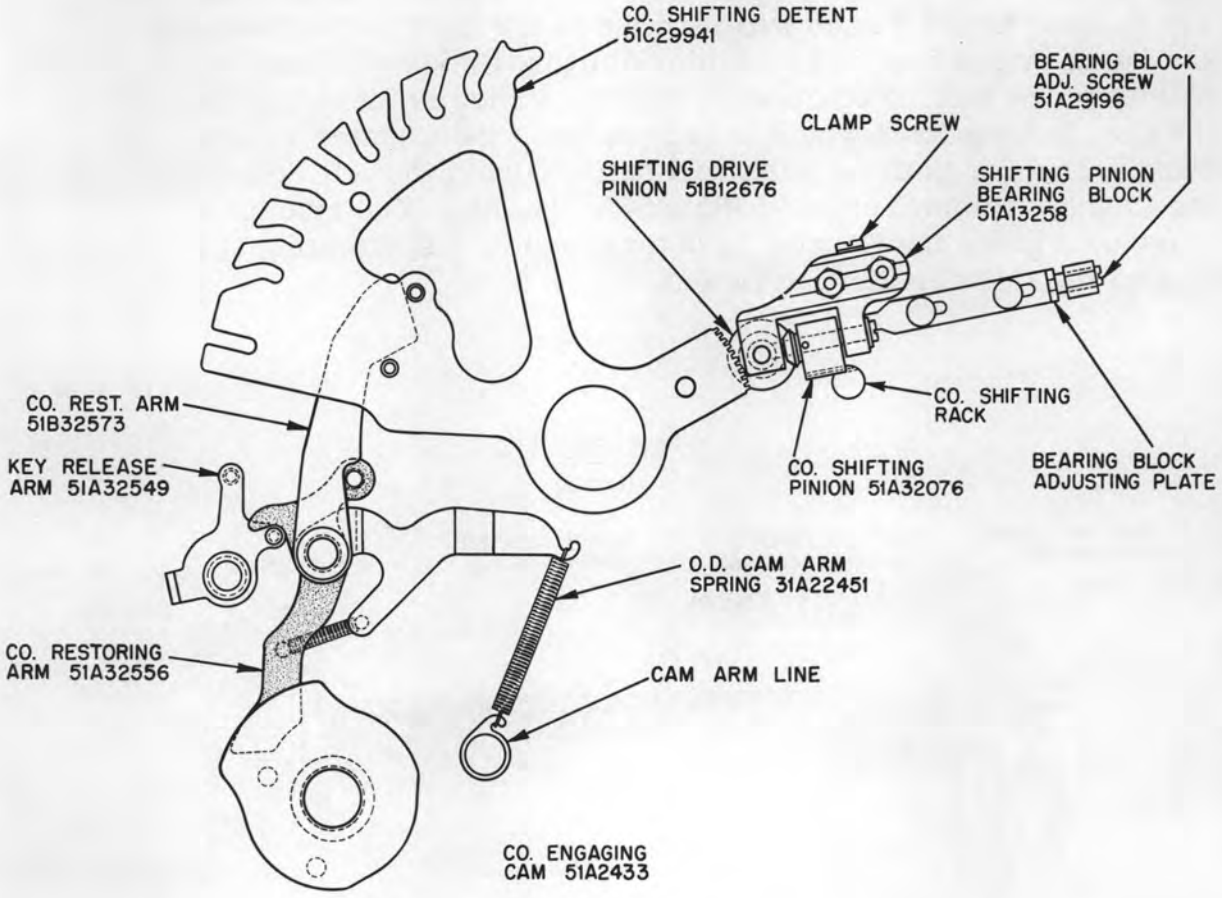


At 1/8 T.O.H. a Roll, located between the Counter Engaging Cam 51A2432 and the Special Counter Reset Cam.will contact the Counter Restoring Arm 51A32556 and move it bottom to the front stretching the spring between the two Counter Restoring Arms. This additional spring tension insures that the Counter Shifting Detent is snug against the key pin when the counter is engaged.

At 3/4 T.O.H. a second roll, located between the Counter Engaging Cam and Special Counter Reset Cam, will again add this spring tension to the Counter Shifting Detent.

At 1-3/4 T.O.H., the Key Lock Line will be turned top to the front release the keys. As this happens a stud in the back of the Key Release Arm 51A32549 will cam the Counter Restoring Arm 51A32556 top to the back and bottom to the front again stretching the spring between the two Counter Restoring Arms.

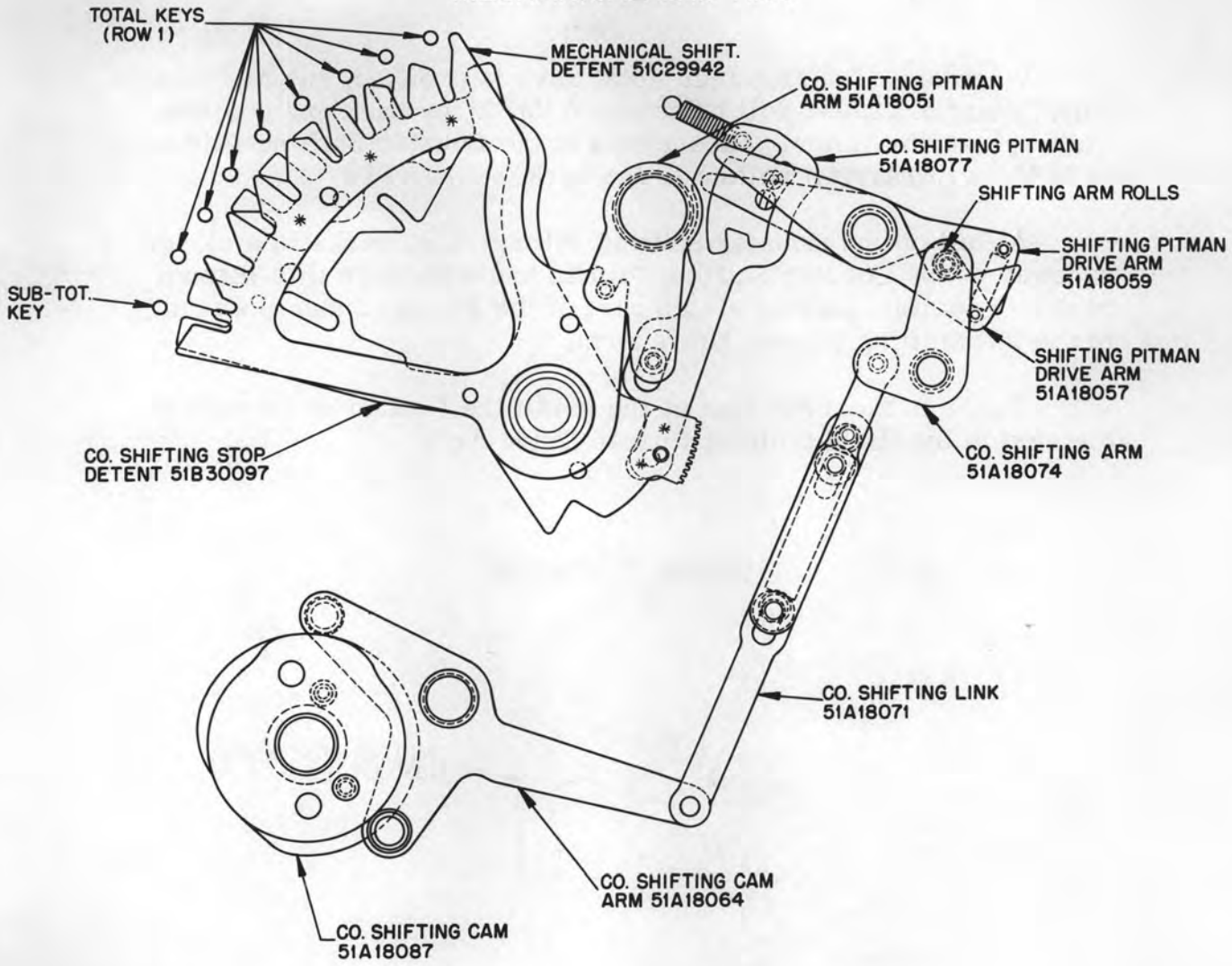
UPPER COUNTER SHIFTING
(C-52)



The additional tension of this spring is used at this time to assist in restoring the Counter to the home position.

When the lead is backed off of the Key Lock Line, the stud in the Key Release Arm will move away from the Counter Restoring Arm 51A32556 allowing this arm to restore and take the spring tension of the Counter Restoring Arm Spring 51A15535 off of the Counter Restoring Arm 51A32573.

When the bottom key in Row 2 is used, the key pin will enter the straight cut in the bottom of the Counter Shifting Detent leaving it in the home position. In this position, the center Pinion of each Pinion group is aligned to Engage the Differential Segments.


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO. SHIFTING CAM 51A18087

LOWER COUNTER SHIFTING - REGISTER POSITION

With the Unit Lock Lever in Register position and a Total key in Row 1 pressed, the Lower Counter will shift mechanically at 5/8 T.O.H. The Counter is shifted at this time, to add the amount cleared from the Itemizer into the selected Clerk's Total.

When the Sub-Total key is used, the Lower Counter does not shift since it is only desired to read the Itemizer.

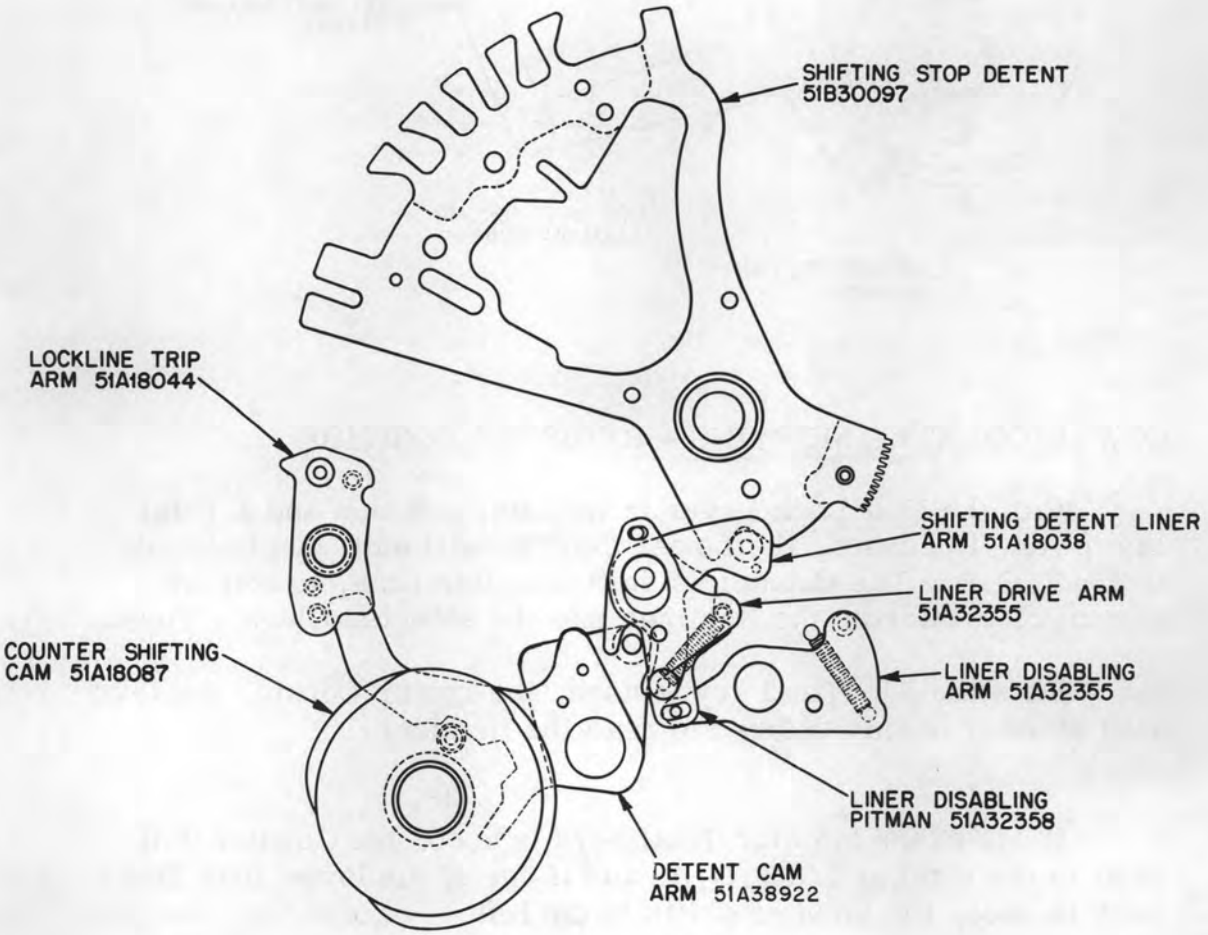
If one of the top four Total keys is used, the Counter will shift to the right at 5/8 T.O.H. and if one of the lower four Total keys is used, the Counter shifts to the left.

When one of the top four Total keys is pressed, the Mechanical Shift Detent 51C29942 will be cammed top to the back one position. The back of this Detent yokes a stud in the Counter Shifting Pitman Arm and will carry it bottom to the back.

A Roll on the Counter Shifting Pitman Arm works in a closed raceway of the Counter Shifting Pitman and will move this Pitman back one position placing a high part of the Pitman under the stud in the left Shifting Pitman Drive Arm.

There is a cut out spot at the top of the Pitman in the path of the stud in the Right Shifting Pitman Drive Arm.

HOMING MECHANISM
(C-52)



At 1/8 T.O.H. a roll on the Counter Shifting Cam will contact a high portion of the Detent Cam Arm carrying it up in front. A stud in the back of this Arm will contact the Liner Drive Arm 51A32355 and move it bottom to the back slightly. The bottom of the Drive Arm is against a stud in the Shifting Detent Liner Arm and will move the Liner Arm up in back slightly. This will force the Eccentric Roll on the Liner Arm into the "V" cut of the Shifting Stop Detent which insures that the Lower Counter is in the home position.

Immediately after 1/8 T.O.H. the Roll in the Counter Shifting Cam moves away from the Detent Cam Arm allowing it to move down in front to take the pressure off the Shifting Detent Liner Arm.

Just before 5/8 T.O.H. the stud in the Counter Shifting Cam will contact the lower extension of the Detent Cam Arm, moving it bottom to the back and top to the front.

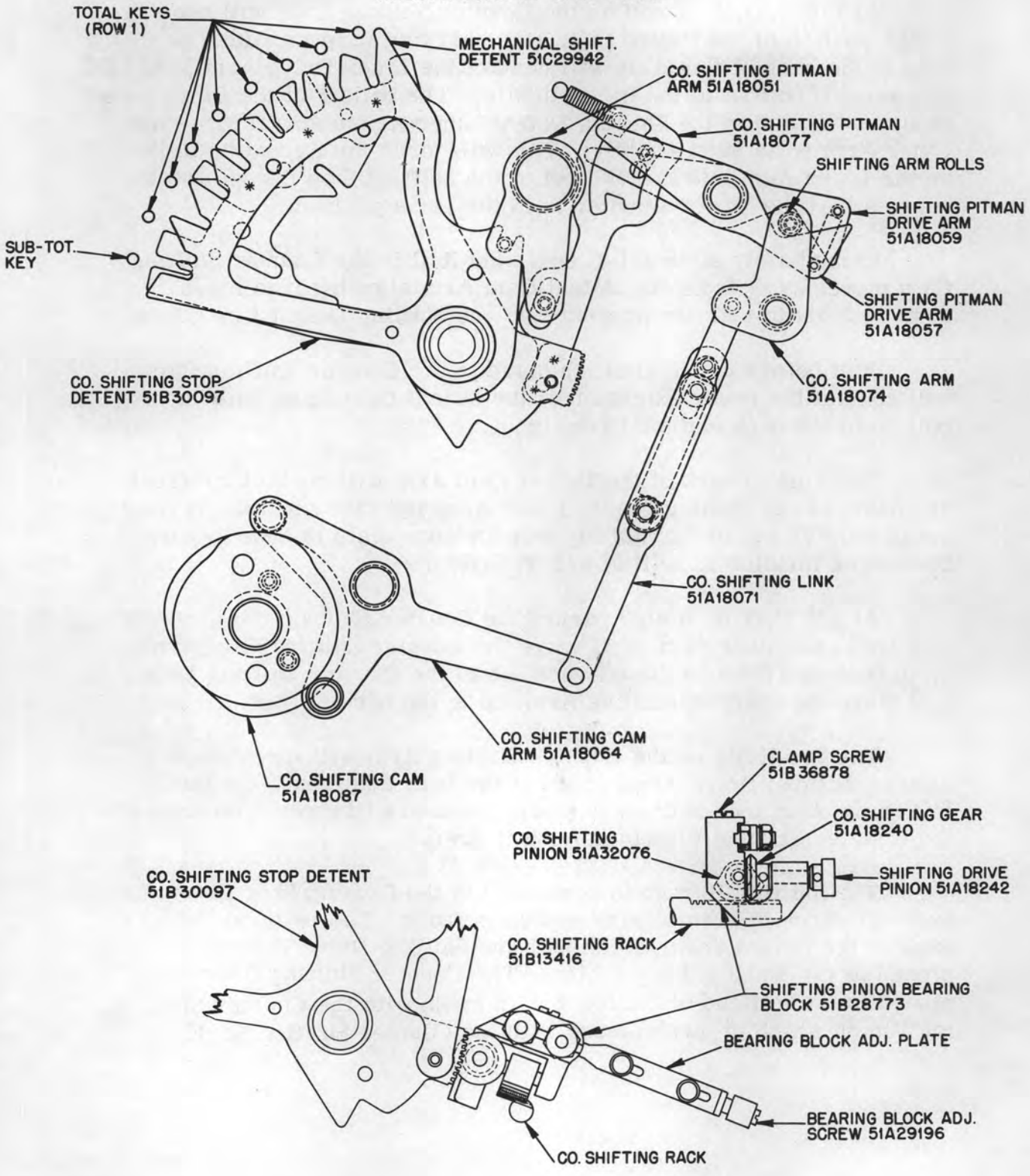
The stud in back of the Detent Cam Arm will contact the front extension of the Shifting Detent Liner Arm and carry it down in back out of the "V" cut in the Shifting Stop Detent. This is done to permit the Lower Counter to shift at 5/8 T.O.H.

At 5/8 T.O.H. a high part of the Counter Shifting Cam, which is a lead and follow cam, will move the Counter Shifting Cam Arm up in back and through the connections to the Counter Shifting Link, will move the Counter Shifting Arm top to the back.

The two Rolls on the Counter Shifting Arm will force the two Shifting Pitman Drive Arms apart at the back and front. As the left Drive Arm moves down in front, the stud will contact the step of the Counter Shifting Pitman moving it down.

The Shifting Pitman is connected to the Shifting Stop Detent and will carry it down in back and up in front. The teeth on the back of the Detent are in mesh with the Shifting Drive Pinion pinned to the Shifting Pinion Line. The Counter Shifting Gear pinned to the left end of the Shaft is in mesh with the Counter Shifting Pinion which in turn meshes with the Counter Shifting Rack.

MECHANICAL SHIFTING


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO. SHIFTING CAM 51A18087
CLAMP SCREW 51B36878
CO. SHIFTING GEAR 51A18240
CO. SHIFTING PINION 51A32076
SHIFTING DRIVE PINION 51A18242
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING RACK 51B13416
SHIFTING PINION BEARING BLOCK 51B28773
BEARING BLOCK ADJ. PLATE
BEARING BLOCK ADJ. SCREW 51A29196
CO. SHIFTING RACK

As the Counter Shifting Detent moves down, through the connections explained above, the Lower Counter will be shifted to the right. The Counter will continue to move to the right until stopped by, either a projection of the Counter Shifting Detent contacting the key pin, or if the top Total key is used, the counter is stopped by the Counter Shifting (Blade) Liner contacting the Counter Side Frame.

When this happens, the Shifting Detent, Lower Counter and Counter Shifting Pitman are stopped. Also, the left Shifting Pitman Drive Arm is stopped which will stop the Counter Shifting Arm.

Since the Counter Shifting Cam Arm is being driven positive, it will continue to move down in back and flex the spring between the upper and lower part of the Counter Shifting Link.

Just before 3/4 T.O.H. the Roll on the Counter Shifting Cam will move away from the bottom extension of the Detent Cam Arm and spring tension will restore the Shifting Detent Liner Arm up against the Shifting Stop Detent.

Between 1 T.O.H. and 1-1/4 T.O.H. the Counter Shifting Cam will reverse the movement of the Counter Shifting Cam Arm and carry the Counter Shifting Link down. The Counter Shifting Arm will be moved top to the front and spring tension will pull the two Shifting Pitman Drive Arms together, releasing the pressure on the Counter Shifting Pitman.

As this happens, spring tension on the Shifting Detent Liner Arm will restore the Shifting Stop Detent and Counter to their home position.

At 1-3/4 T.O.H. the Roll on the Counter Shifting Cam will contact the front camming surface of the Detent Cam Arm and raise it up. This will carry the Eccentric on the Shifting Detent Liner Arm into the "V" cut of the Shifting Stop Detent to insure the Counter is returned to the home position.

Just before the machine comes home, the Roll on the Counter Shifting Cam will move away from the high part of the Detent Cam Arm removing the positive pressure on the Shifting Detent Liner Arm.

When one of the Lower four Total keys is used, the Mechanical Shift Detent and Counter Shifting Pitman will receive a two position shift to the back, placing a high part of the Shifting Pitman in the path of the stud in the Right Shifting Pitman Drive Arm.

At 5/8 T.O.H. on this operation, the Right Shifting Pitman Drive Arm will contact the Counter Shifting Pitman and carry it up. This will reverse the movement through the Shifting Pinion Bearing Block and shift the Counter to the left. The Counter is again stopped by either a projection of the Shifting Stop Detent against a key pin or if the lower total key is used, the Counter Pinion Tube will contact the hub in the Counter Side Frame.

The Sub-Total key does not move the Mechanical Shift Detent and the Counter Shifting Pitman will remain to the front in its home position.

At 5/8 T.O.H. on this operation, the right and left Shifting Pitman Drive Arms will contact the Counter Shifting Pitman at the same time. This leaves the Counter in the home position to read the Itemizer.

READ ROW 1

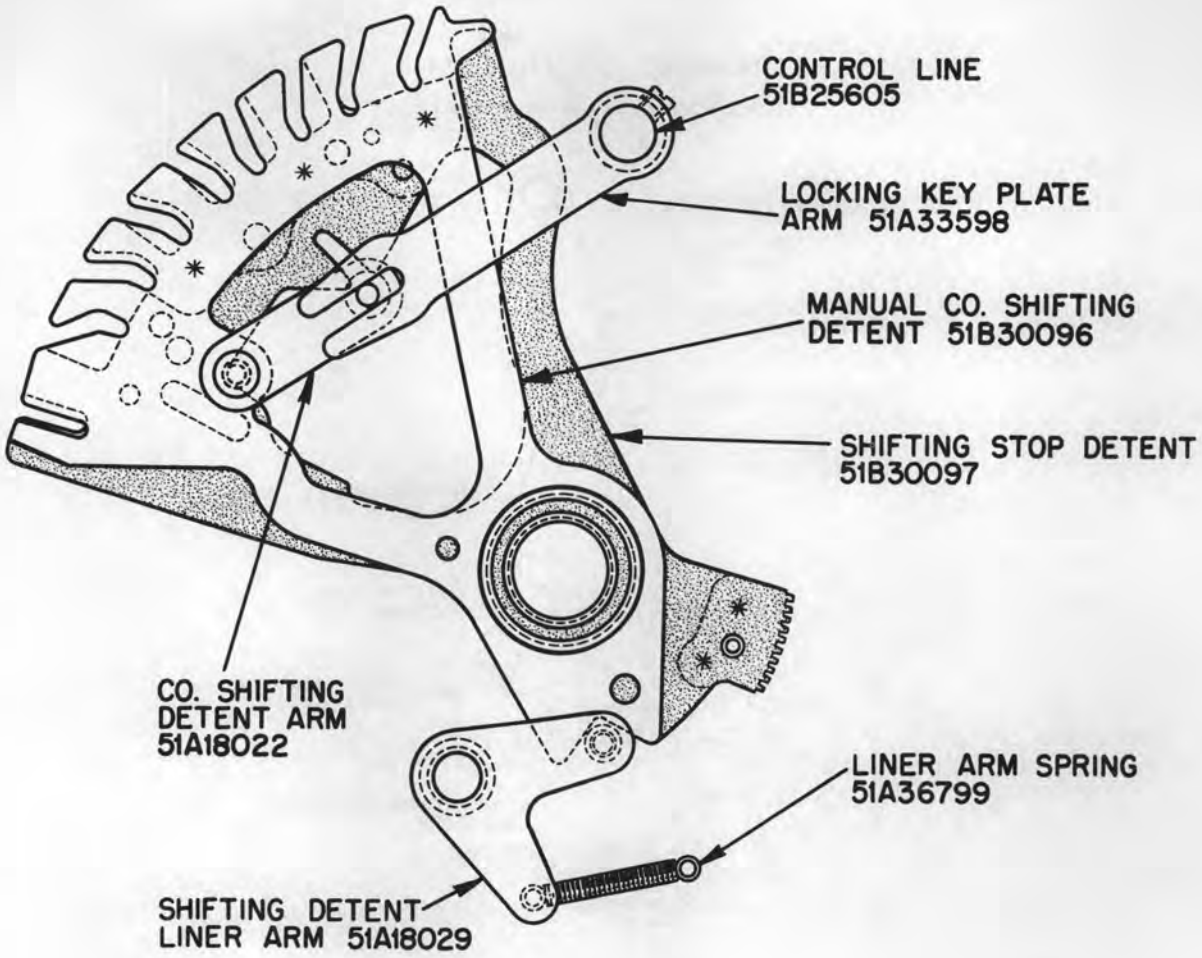
When the Unit Lock Lever is moved to the Read or Reset Row 1 position, the Control Line is turned top to the back. The Locking Key Plate Arm is set screwed to the right end of the line and will be carried up in front.

The Locking Key Plate Arm yokes the stud on the right side of the Counter Shifting Detent Arm and will carry this arm up. The long stud in the left side of the Counter Shifting Detent Arm will be carried up into a raceway of Shifting Stop Detent.

The Counter Shifting Detent Arm is swung on the Manual Counter Shifting Detent and with the stud in this arm in the raceway of the Shifting Stop Detent, the two Detents are bonded together.

When any Total key in Row 1 is used, the Counter will be shifted manually to the corresponding total.

Since the Counter is shifted as the key is pressed, the positive drive to the Shifting Detent Liner Arm must be disabled while the Unit Lock Lever is in Read or Reset Row 1.



When the Unit Lock Lever is moved to Read Row 1, the Counter Engaging Plate is moved bottom to the back. The bottom of the Engaging Plate will contact the stud in the back of the Liner Disabling Arm and carry it down in back and up in front. The small stud at the front of the Liner Disabling Arm is in the closed elongation of the Liner Disabling Pitman and will move the Pitman up.

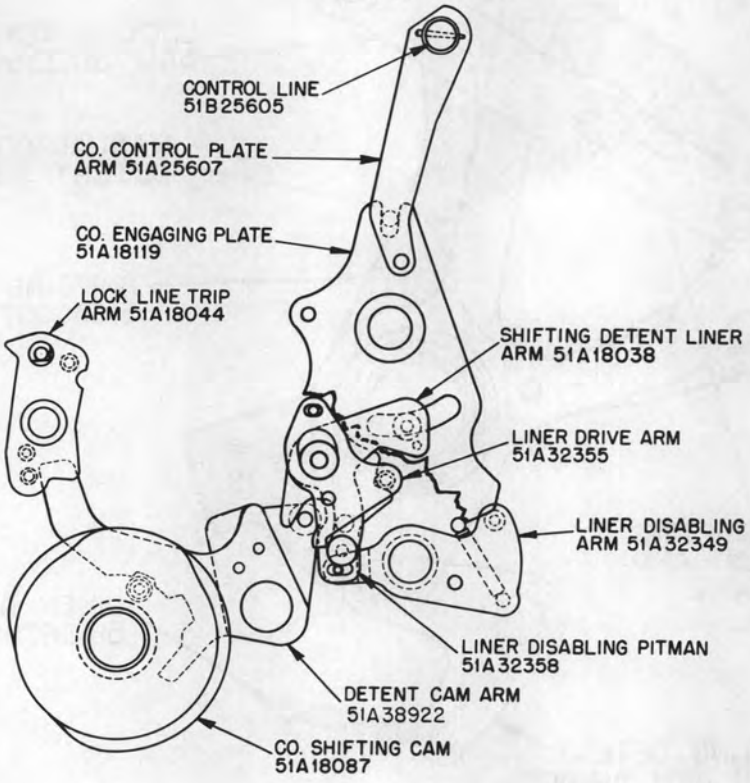
The Liner Disabling Pitman, Shifting Detent Liner Arm and Liner Drive Arm are all swung on the same stud located in the Right Side Frame. The Liner Disabling Pitman is swung to the left of the Shifting Detent Liner Arm and has a stud at the top that extends into an elongation at the top of the Liner Drive Arm.

Also, the Drive Arm Spring 51A37358 is connected between the Liner Disabling Pitman and Liner Drive Arm causing them to move together. The Shifting Detent Liner Arm is connected to the Liner Disabling Pitman by the spring stud at the bottom extending through the vertical elongation of the Disabling Pitman. As the Liner Disabling Pitman is carried up, the Liner Drive Arm will be carried up also, lifting the Lower Extension of the Drive Arm above the half round stud in the Shifting Detent Liner Arm.

HOMING MECHANISM

(UNIT LOCK LEVER IN READ ROW 1 POS.)

C-52


CONTROL LINE 51B25605
CO. CONTROL PLATE ARM 51A25607
CO. ENGAGING PLATE 51A18119
LOCK LINE TRIP ARM 51A18044
SHIFTING DETENT LINER ARM 51A18038
LINER DRIVE ARM 51A32355
LINER DISABLING ARM 51A32349
LINER DISABLING PITMAN 51A32358
DETENT CAM ARM 51A38922
CO. SHIFTING CAM 51A18087

When the Detent Cam Arm moves top to the back at 1/16 T.O.H. and 1-3/4 T.O.H., the stud in this arm will contact the Liner Drive Arm and carry it bottom to the back. Since the Shifting Detent Liner Arm is being held down in back by the Shifting Stop Detent, it will prevent the Liner Disabling Pitman from moving and the Drive Arm spring between the Disabling Pitman and Liner Drive Arm will flex.

The Shifting Detent Liner Arm works with the Manual Counter Shifting Detent to restore it to the home position when the total keys are released.

REMOVAL OF COUNTER

1. Trip Machine, using sub-total key, and operate to 1/16 turn of the handle.

2. Remove Back Frame and brace for lower right corner of counter.

3. Mark and remove the two counter spacers between the left side frame and left counter frame.

4. Remove slip printer selecting line.

5. Remove clips from counter support shafts.

6. Remove counter support shaft that upper counter engaging arm is swung on. Unhook lower end of counter engaging link and remove upper counter engaging arm.

7. Remove spring clips from the following:

   (a) Transfer Pawl Control Yoke Arm
   (b) Transmission Liner Arm (both ends)
   (c) Indicator Liner Arm (both ends)
   (d) Indicator Liner Link (top of link)
   (e) Transfer Restoring Link
   (f) Counter Liner Link

8. Remove large Support Shaft through right side frame.

9. Remove short Counter Support Shaft through right side.

10. Unhook Counter Shifting Link (mechanical shift) at top and move link top to the back.

11. Disengage Counter Engaging Arm for lower counter and move top to the back.

12. Hold Counter and remove upper Support Shaft.

13. Move Counter to the back to disengage Shifting Pinion Bearing blocks from detents. Move Counter toward right side frame to allow the two Liner Blade Guide Screws to clear left side frame. Now move Counter Straight to the back to remove.

REMOVAL OF UPPER PINION LINE

1. Restore all transfers.

2. Remove Bearing Block Assembly.

3. Remove Guide Plate.

4. Remove the nut on the left end of the Counter Shaft and take the Liner Blade off.

5. Turn the Counter Pinion Shaft until the Counter Shifting Rack can be removed from the right side.

6. Restore all transfers and lift the Pinion Line up on the right side and remove.

REPLACING UPPER PINION LINE

1. Restore all Transfers.

2. Line up long teeth and replace Pinion Line with the long teeth up.

3. Place left end of Pinion Line in position and rotate pinions until they line up with the stationary liner. As the liners line up with the stationary liner, the Pinion Line will drop into position.

4. Install the Counter Shifting Rack and turn the Tube Shaft until the Rack is all the way in.

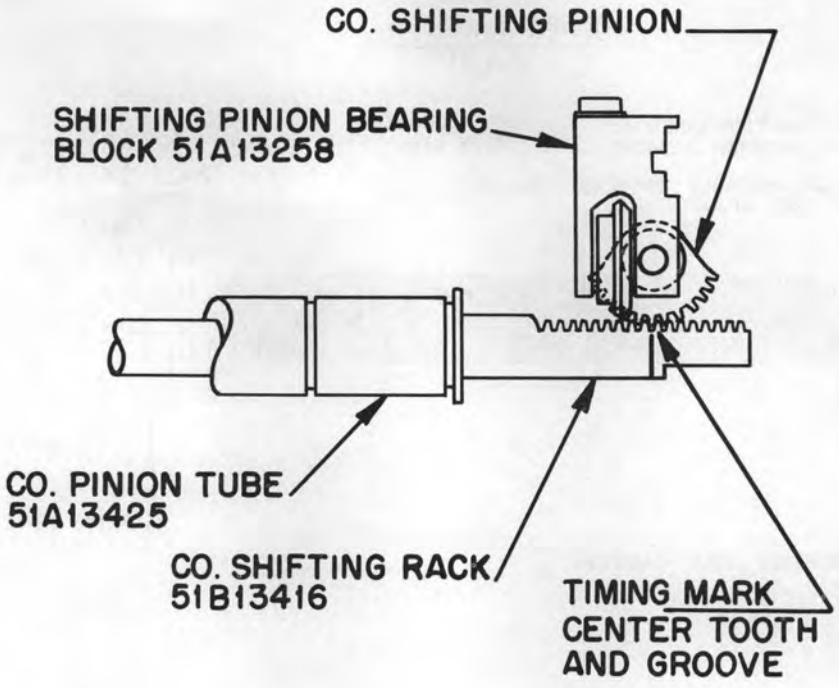
5. Replace the Liner Blade, Rack Guide Plate and Liner Blade Guide Screw and check for freedom.

COUNTER SHIFTING ADJUSTMENTS

UPPER COUNTER ADJUSTMENTS - COUNTER OUT OF MACHINE

1. With the Shifting Pinion Bearing Block off, the Counter must shift free.

2. Check the Counter Shifting Pinion for end play on the Shifting Pinion Shaft. End play must not exceed .005". To adjust, use either the Consecutive Number Carrying Pawl Washer 900A38171 (.005) or Bearing Block Washer 51A37431 (.003). If there is wear on the Pinions in the Bearing Block replace the Pinions.


CO. SHIFTING PINION
SHIFTING PINION BEARING BLOCK 51A13258
CO. PINION TUBE 51A13425
CO. SHIFTING RACK 51B13416
TIMING MARK CENTER TOOTH AND GROOVE

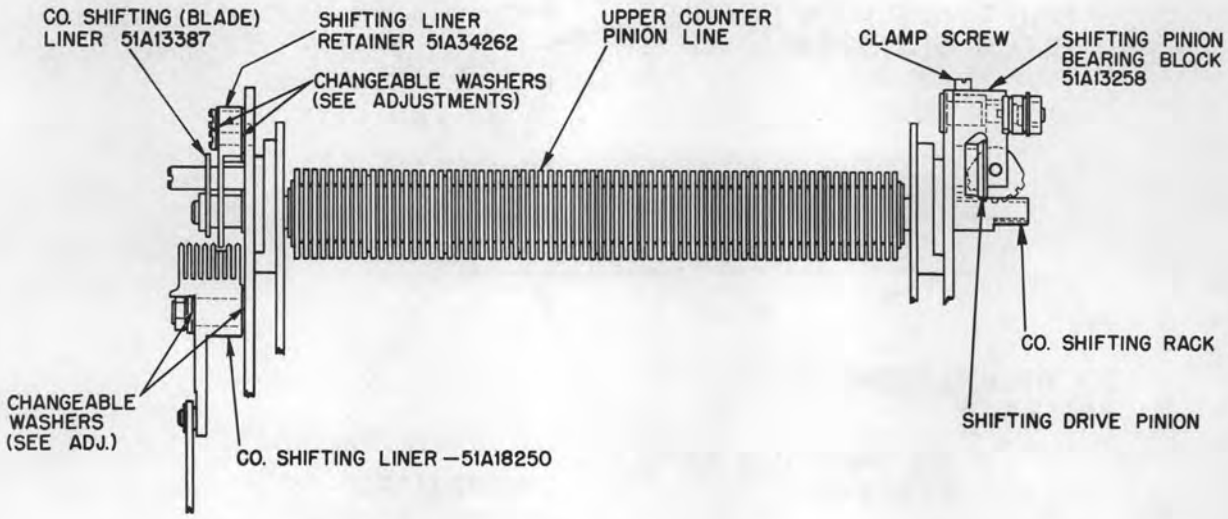
3. Replace Shifting Pinion Bearing Block and time the Counter Shifting Pinion with the Counter Shifting Rack. Groove on Counter Shifting Rack in line with center tooth of Counter Shifting Pinion.

4. Install Eccentrics on the Studs with the high sides up. Adjust the Eccentrics by turning them the same number of positions in the same direction. Turn the Eccentrics until the Counter Shifting Pinion meshes with the Counter Shifting Rack as deep as possible with no binds.

5. The Eccentrics come in sizes .010" and .020". Always use them in pairs of the same size. Check for binds counter in and out of mesh.

6. Back off the Adjusting Screw for the Bearing Block Adjusting Plate and move the Shifting Pinion Bearing Block all the way to the back. Tighten the Clamp Screw 51A36878 just tight enough to take the play out of the Bearing Block. Replace the nuts on the two studs and tighten finger tight.

UPPER COUNTER
(C-52)



7. Shift the Counter Pinion Tube all the way to the right. The last Pinion in each group should be aligned with the Transfer Pawl Slot.

   To adjust, install spacers on the hub of the Counter Shifting (Blade) Liner.

   Use Washers listed below.

51A14289	Counter Pinion Liner Washer	.005
51A14290	Counter Pinion Liner Washer	.010

   With the Counter in this position engage the Counter Shifting Liner. The Counter should be held snug.

   To adjust the liner, use washers listed below:

800A255	Counter Spacing Washer
2000A25209	Slip Feed Stud Washer
2000A44759	Elmination Pawl Control Stud Washer

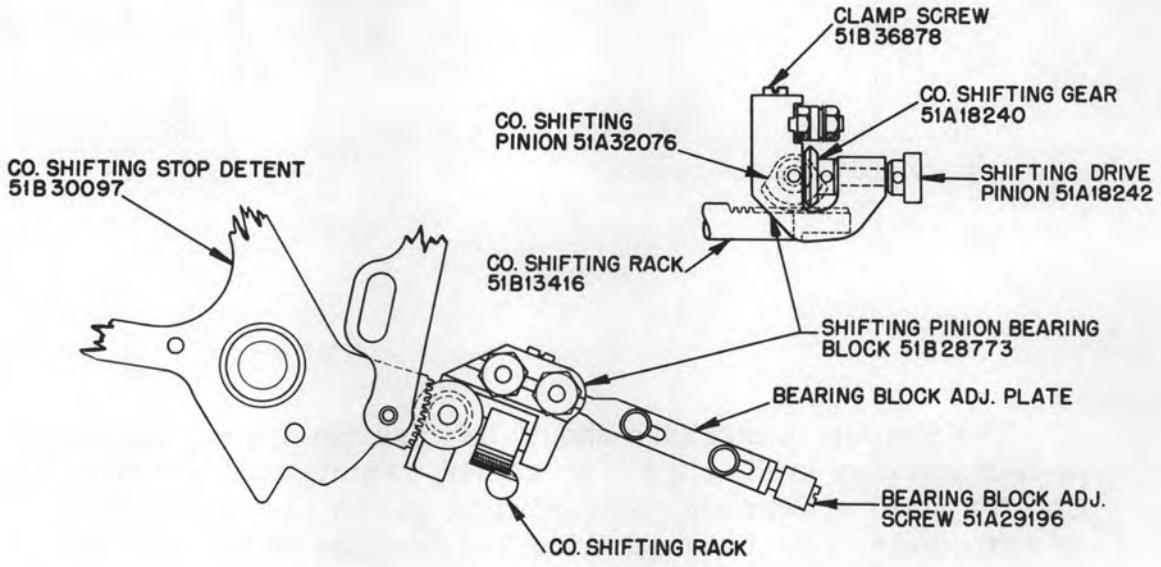
8. If the adjustment of the Counter Shifting Liner 51A18250 is changed, the Shifting Liner Retainer 51A34262 will also have to be adjusted.

   Use Washers listed below to make this adjustment:

900A3871	Consecutive Number Carrying Pawl Washer	.005.
51A37413	Bearing Block Washer	.003.
51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	
5000A33499	Paper Frame Stud Washer	.010.

9. With the Liner Blade in the fifth slot, from the left, of the Counter Shifting Liner 51A18250, turn the Pinion Tube Shaft until the Counter Shifting Rack groove and center tooth of the Counter Shifting Pinion are in alignment.

10. Counter is ready to be installed.



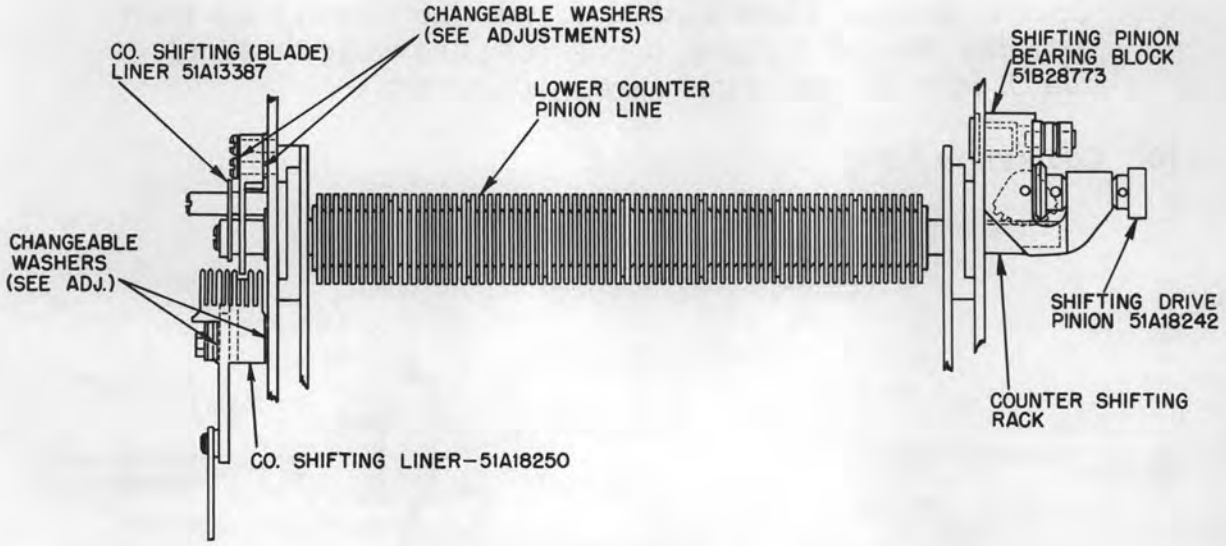
LOWER COUNTER ADJUSTMENT - COUNTER OUT OF MACHINE

1. The Pinion Tube must shift free with Shifting Pinion Bearing Block removed.

2. The Counter Shifting Pinion must not have more than .005 end play. To adjust, use Washers listed below:

900A3871	Consecutive Number Carrying Pawl Washer	.005.
51A37413	Bearing Block Washer	.003.
51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	
5000A33499	Paper Frame Stud Washer	.010.

LOWER COUNTER
(C-52)



The Shifting Pinion Line should be washered for a maximum of .005 end play to the right. To adjust, remove dowl pin from the Counter Shifting Gear and move Shifting Pinion Line to the right. Be extremely careful when driving this dowl pin or the Shifting Pinion Line will be bowed causing a bind. Use washers listed for adjusting end play:

51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	.005.
5000A33499	Paper Frame Stud Washer	.010.

3. Replace Shifting Pinion Bearing Block and time with Counter Shifting Rack. Groove on Counter Shifting Rack in line with center tooth of Counter Shifting Pinion.

4. Install Eccentric on studs with high side up. To adjust Eccentrics and Liners, follow instructions of steps 4, 5, 6, 7 and 8 of Upper Counter.

5. Shift Counter all the way to the left. The last Pinion on the right of each Pinion Group should be aligned with the Transfer Pawl Slots. As must as .020 draw to the right is permitted as the Counter Shifting Liner is engaged. No draw is permitted to the left since the Counter Shifting Liner would be forcing the Counter against the Stop and parts would be strained.

To adjust for draw, change the Counter Shifting Stop. There are two stops available at the present time for this adjustment.

51A36011	Counter Shifting Stop	.068
51A36877	Counter Shifting Stop	.048

In order to change the Counter Shifting Stop the Lower Counter Pinion Tube will have to be removed.

6. With the Liner Blade in the fifth slot, from the left, of the Counter Shifting Liner 51A18250, turn the Counter Pinion Shaft until the Counter Shifting Rack Groove and center tooth of the Counter Shifting Pinion are in alignment.

7. Counter is ready to be installed.

INSTALLATION OF COUNTER

1. Press Sub-Total Key and operate to 1/16 T.O.H.

2. Install Counter in machine and work Lower Counter Engaging Arm into position.

3. By reversing removal procedure, completely install Counter with the exception of the Upper Support Shaft.

4. Shift Upper Counter and Lower Counters so the Copper colored Pinions are aligned with the Transfer Pawl slots and operate machine, until Counter Shifting Liners are engaged.

5. Adjusting each Counter separately, loosen the Clamp Screw and nuts that hold the Shifting Pinion Bearing Block. Use finger and push Shifting Pinion Bearing Block to the front until it is tight in mesh with the teeth of the Counter Shifting Detent (Upper Counter) and Shifting Stop Detent (Lower Counter).

6. Turn Adjusting Screw Until the Bearing Block Adjusting Plate just touches the Shifting Pinion Bearing Block.

7. Tighten the Clamp Screw just tight enough for the Lock Washer to prevent the screw backing out.

8. Tighten Lock Nuts that hold the Counter Shifting Bearing Block in place.

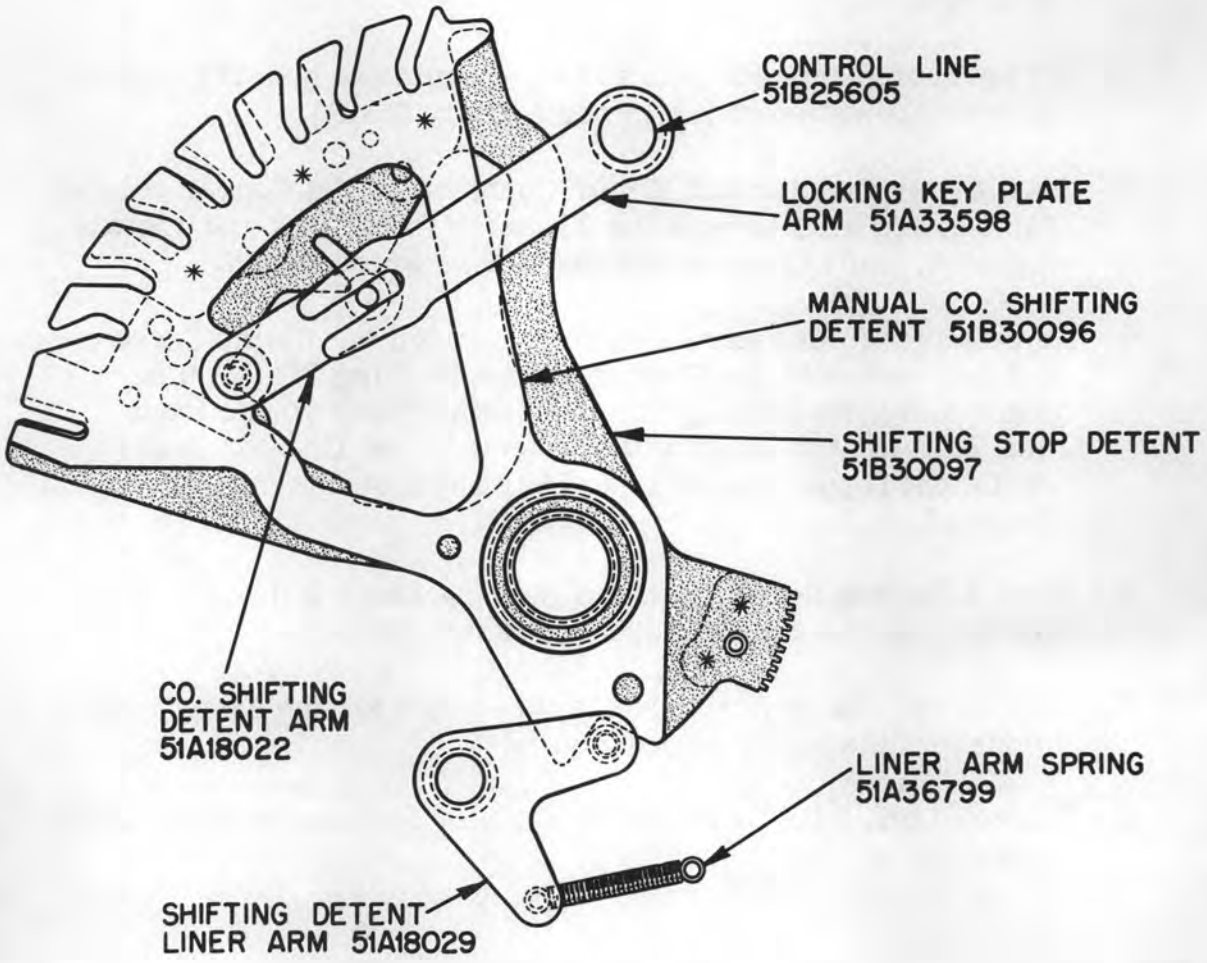
9. Replace Upper Counter Support Shaft and operate Machine home.

10. With the Keybanks removed, shift the Counters to their extreme positions each way and they must restore by spring tension.

UPPER COUNTER DRAW ADJUSTMENT - COUNTER IN MACHINE

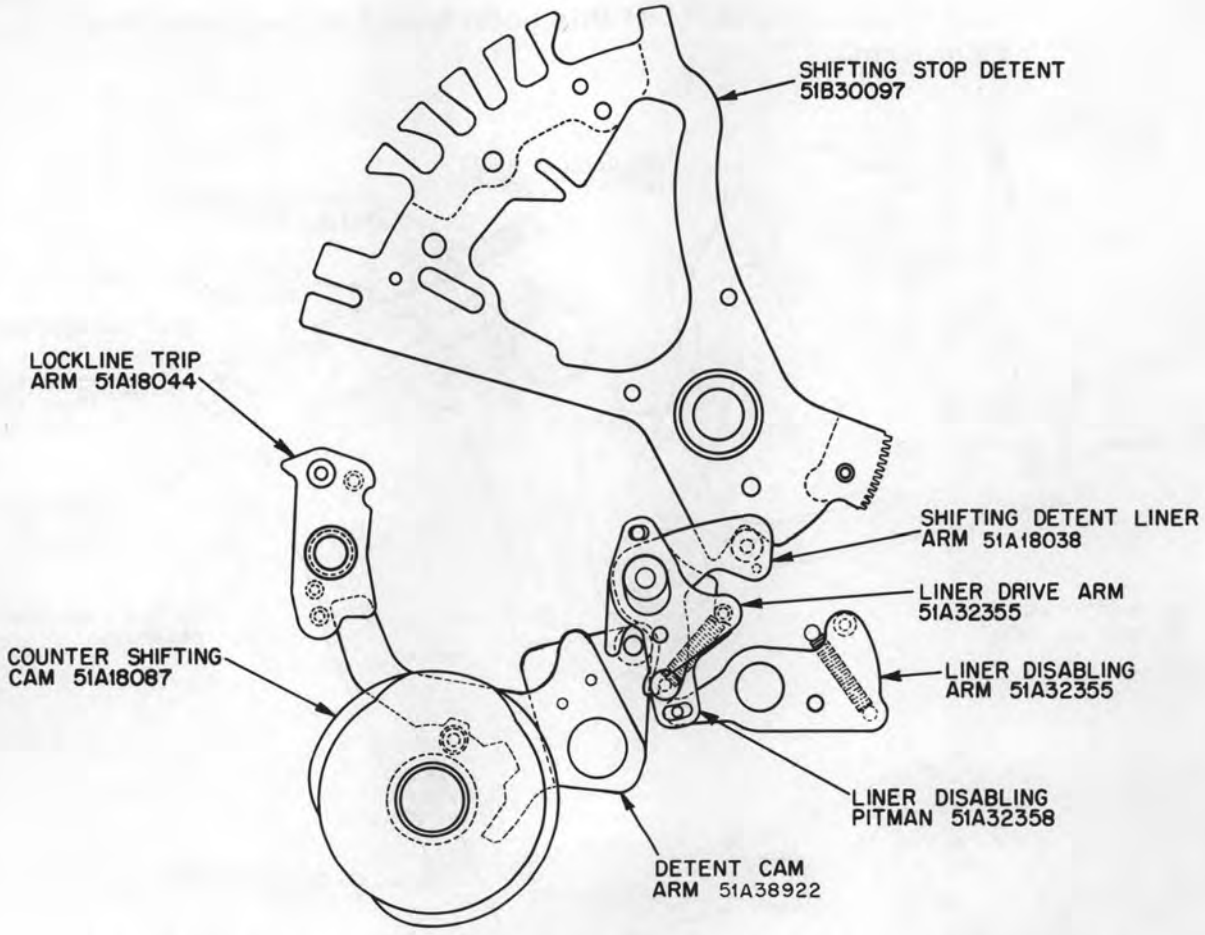
1. Press bottom key in Row 2 and operate machine until Counter Shifting Liners are engaged. There should be no draw to the Counter at this time. Adjust by turning the Counter Tube Shaft. Next, check each key in Row 2. If there is excessive draw in any of these positions (more than .020) readjust the Counter Tube Shaft. Again, check draw with the Lower Key in Row 2 to see that it is still within the .020 limit.

NOTE: If a draw adjustment is required in either counter, the Slip Printer will have to be removed.



LOWER COUNTER ADJUSTMENTS - COUNTER IN MACHINE

1. Remove Transaction Keybank and move the Unit Lock Lever to read Row 1. The long stud in the Counter Shifting Detent Arm must enter the raceway in the Counter Shifting Stop Detent without camming the detent in either direction. To adjust for this condition, use the Eccentric in the Shifting Detent Liner Arm.



2. With U. L. L. in Register Position, operate machine to 1/16 T. O. H. and stop when the Detent Cam Arm has received its full movement up in front by the roll on the Counter Shifting Cam. At this time, check the Counter Shifting Stop Detent for being snug.

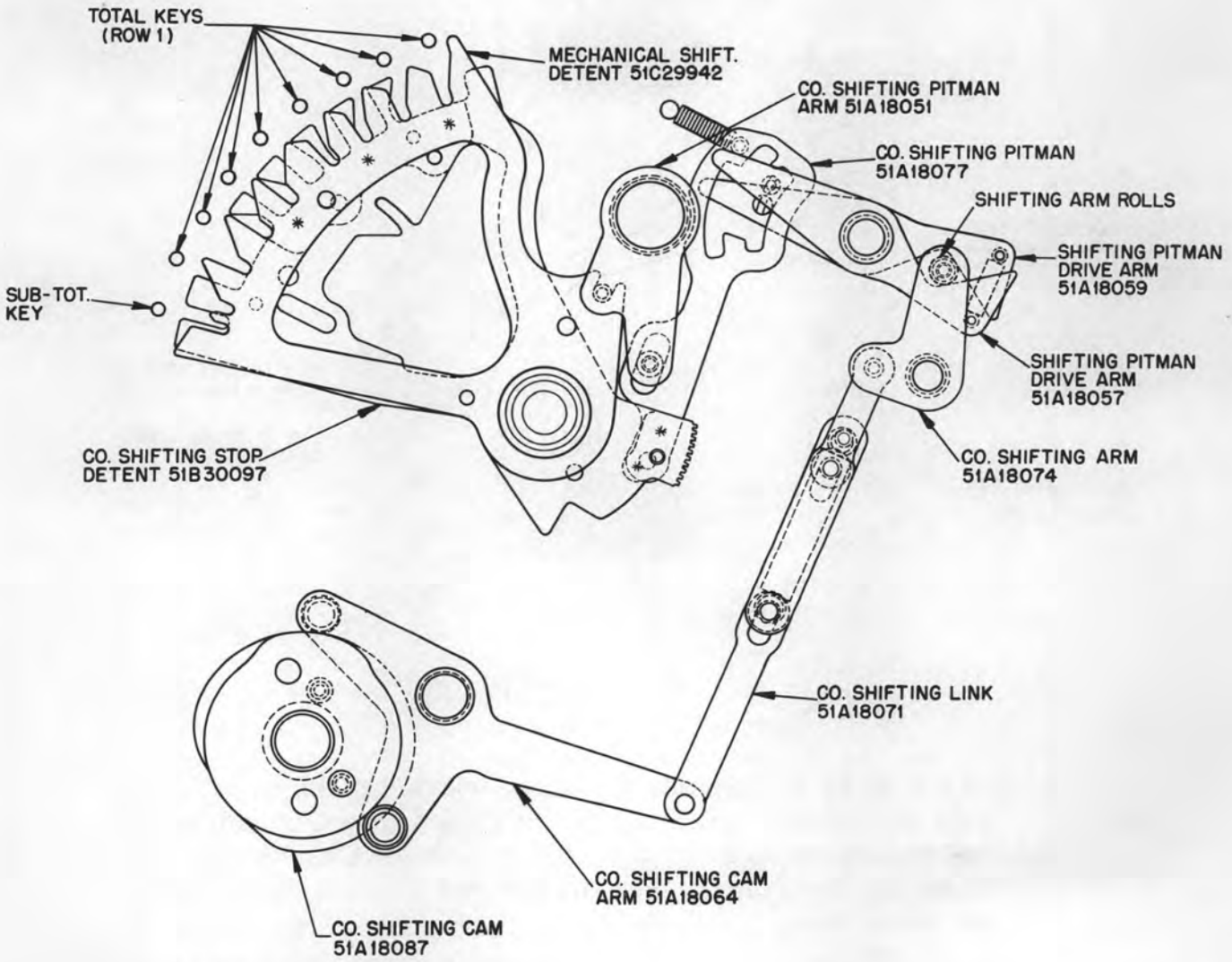
   This adjustment is obtained by changing the roll on the Counter Shifting Cam Arm.

51A33158	Cam Arm Roll	.250
51A33159	Cam Arm Roll	.260
51A33160	Cam Arm Roll	.270
51A33161	Cam Arm Roll	.280
51A33162	Cam Arm Roll	.290

Caution: When making this adjustment, use only as large a roll as is required to take the play out of the Counter Shifting Stop Detent. If a Larger roll than necessary is used, the small stud in the top of the Liner Disabling Pitman could be broken out when reading or resetting Row 1.

3. Operate machine until the Keylock Line has restored to the point of maximum lead (1-3/4T.O.H.). Set Eccentric on Keylock Line Arm to just touch the Detent Cam Arm without any pressure.

Too much adjustment at this point would damage the Detent Cam Arm.


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO. SHIFTING CAM 51A18087

DRAW ADJUSTMENT

1. Make a manual Sub-Total operation and as the Counter engages at 1/8 T.O.H. there should be no draw to the counter.

To adjust, loosen lock nut on Counter Shifting Plate Liner and turn Pinion Tube Shaft in direction necessary to overcome draw.

2. Continue operation to 5/8 turn of the handle. The Shifting Pitman Drive Arms should not move the Counter at this time.

If the counter is being shifted slightly to the left at this time, change the Shifting Arm Roll that drives the right Shifting Pitman Drive Arm.

If the Counter is being shifted to the right, change the Shifting Arm Roll for the left Shifting Pitman Drive Arm.

The available rolls are listed below:

51A18079	Shifting Arm Roll	.327
51A18079	Shifting Arm Roll	.342
51A18080	Shifting Arm Roll	.312
51A18081	Shifting Arm Roll	.357
51A18082	Shifting Arm Roll	.372

In the event one of the Shifting Arm Rolls are changed, the following should be checked.

Operate machine, first with the top Total Key and then with the lower Total Key, and the spring on the Counter Shifting Link 51A18071 should flex after the lower Counter has shifted. This insures that the Counter will be shifted to the extreme Totals in each Pinion Group.

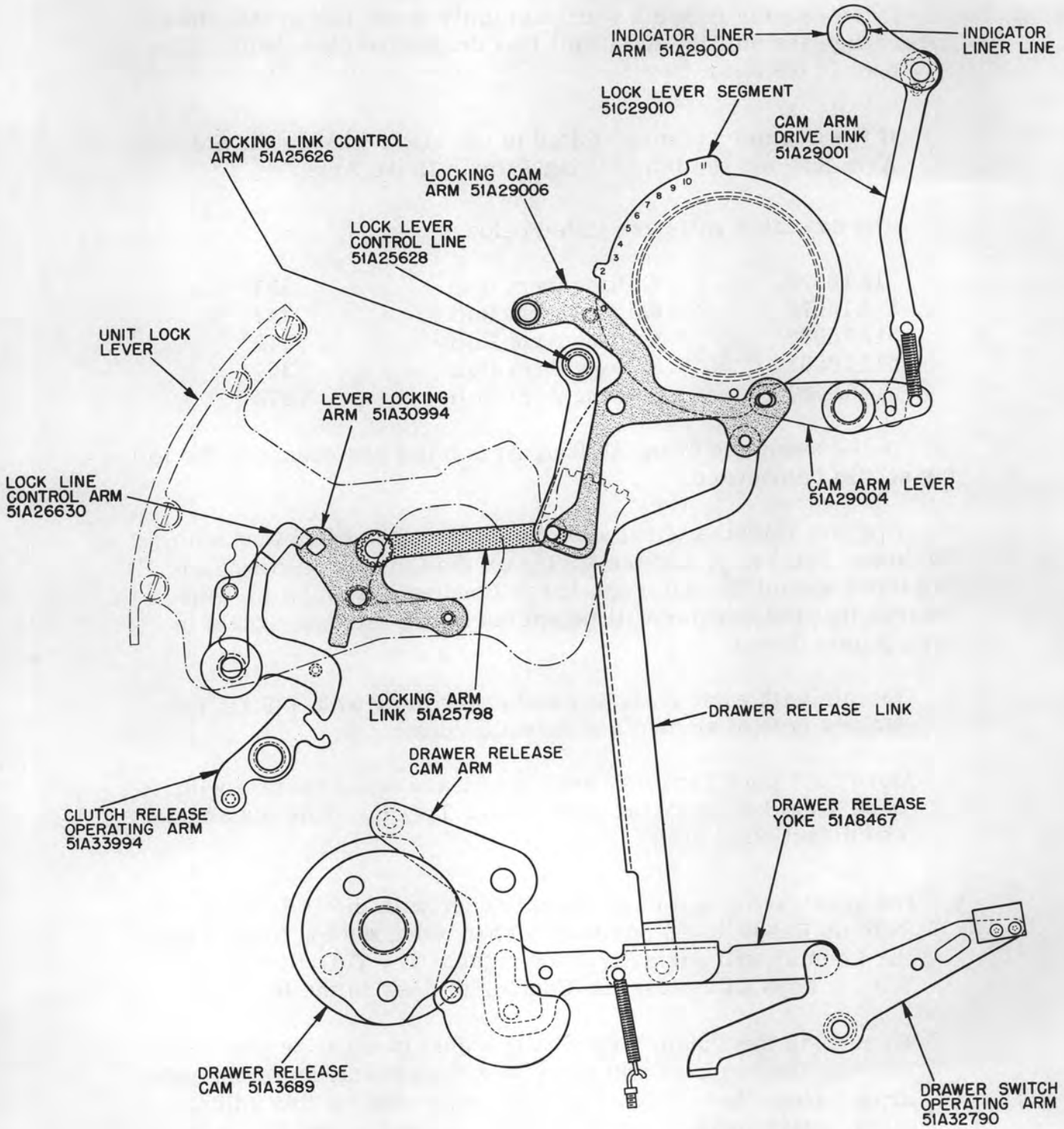
3. Operate with each Total Key and check draw at 3/4 T.O.H. Make a note of amount and direction draw.

4. Move Unit Lock Lever to Read Row 1 and again operate with each Total key checking draw at 1/8 T.O.H. Note the amount and direction of draw.

5. The greatest amount of draw will occur with the U.L.L. in the Read or Reset Row 1 position. When using the top Total Keys, the Counter will normally draw right at 1/8 T.O.H. and the Bottom keys will cause the Counter to draw to the left.

By turning the Pinion Tube Shaft, adjust to equalize the draw between the two keys that have the greatest amount of opposite draw (less than .035 permitted). After making this adjustment, again check the item position of the Counter for draw to see that it is not excessive.

DRAWER CONTROL (C-52)


INDICATOR LINER ARM 51A29000
INDICATOR LINER LINE
LOCK LEVER SEGMENT 51C29010
CAM ARM DRIVE LINK 51A29001
LOCKING LINK CONTROL ARM 51A25626
LOCKING CAM ARM 51A29006
LOCK LEVER CONTROL LINE 51A25628
UNIT LOCK LEVER
LEVER LOCKING ARM 51A30994
LOCK LINE CONTROL ARM 51A26630
CAM ARM LEVER 51A29004
LOCKING ARM LINK 51A25798
DRAWER RELEASE LINK
DRAWER RELEASE CAM ARM
CLUTCH RELEASE OPERATING ARM 51A33994
DRAWER RELEASE YOKE 51A8467
DRAWER RELEASE CAM 51A3689
DRAWER SWITCH OPERATING ARM 51A32790

LOCK LEVER SEGMENT 51C29010

The Lock Lever Segment 51C29010 controls the Unit Lock Lever, Drawer Operating and Bell Ringing Mechanism. Row 1 controls the position that the Lock Lever Segment will be stopped.

At 1/16 turn of the handle, on an Item Operation, the Indicator Liner Line is turned top to the back and will carry the Indicator Liner Arm 51A29000 down in back. Through the connections to the Cam Arm Drive Line 51A29001 and Cam Arm Lever 51A29004, the Locking Cam Arm will be moved top to the front. This will take the stud in the Locking Cam Arm away from the surface of the Lock Lever Segment 51C29010 allowing the Segment to be positioned.

As the bottom of the Lock Cam Arm moves back, it will carry the Locking Arm Link 51A25798 back and turn the Lever Locking Arm top to the back. The stud in the Locking Lever Arm will move into the path of the Lock Line Control Arm preventing it being moved which will lock the Unit Lock Lever.

The back of the Locking Cam Arm is connected to the Drawer Release Link and will raise this link up. The Drawer Release Link is connected to the Drawer Release Yoke and will raise it up in front placing the wide portion of the raceway around the stud in the Drawer Release Cam Arm disabling Drawer release.

When the Indicator Liner Arm receives reverse movement, spring tension will carry the Locking Cam Arm top to the back until the stud contacts the high surface of the zero position on the Lock Lever Segment.

This will stop the Locking Cam Arm, Locking Arm Link and Lever Locking Arm, leaving the stud in the Lever Locking Arm in the path of the Lock Lever Control Arm.

In this position, the Unit Lock Lever is locked and the Drawer Release Yoke 51A8467 is held up in the disabled position.

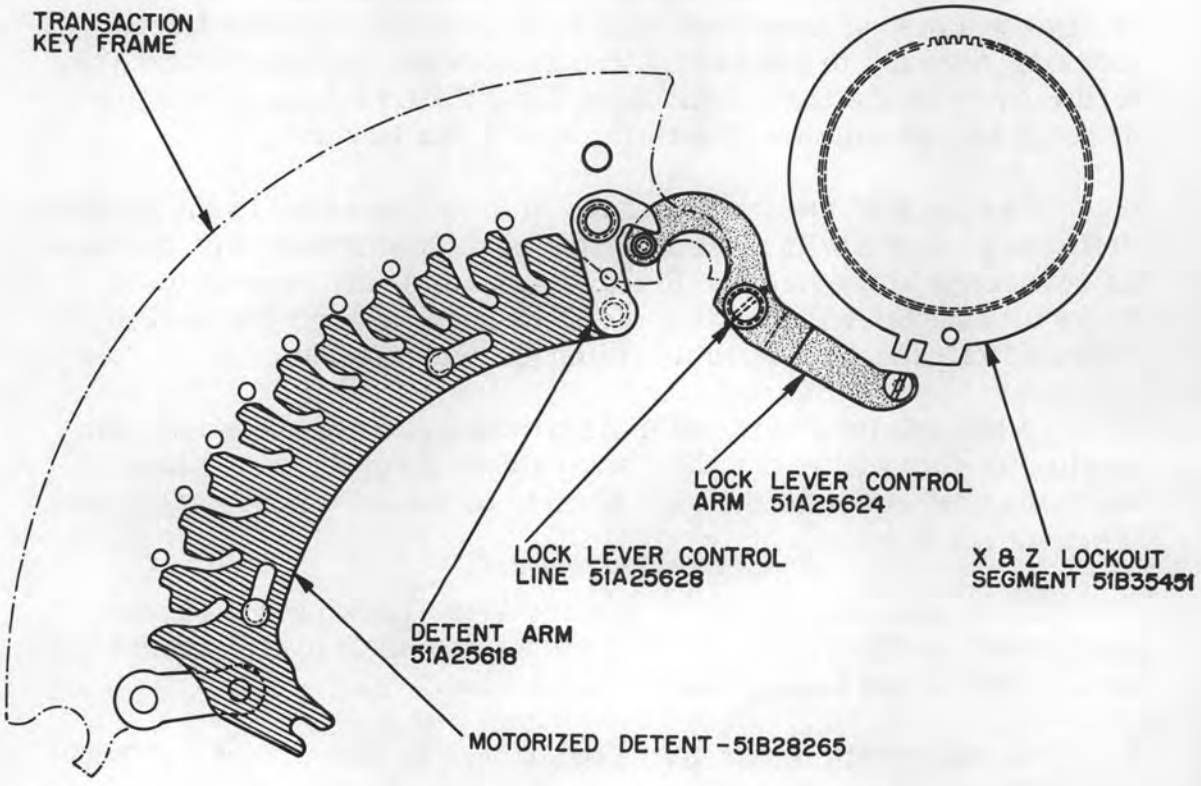
When a Sub-Total Operation is made, the #2 position of the Lock Lever Segment is placed in the path of the Locking Cam Arm, which will continue to lock the Unit Lock Lever and disable Drawer opening.

When a Total key is used, the Lock Lever Segment will be stopped in one of the positions 3 through 10. These positions are all low which will allow the Locking Cam Arm to receive enough movement top to the back to unlock the Unit Lock Lever and able Drawer release.

If the machine is operated with the Unit Lock Lever in the Read or Reset Row 2 position, the Row 1 Differential Segment is stopped in the first position by the 2 and 11 Segment stop. This will position the Lock Lever Segment 51C29010 to the 1st position which is a medium surface.

This surface of the Lock Lever Segment will allow enough movement to the Locking Cam Arm, top to the back, to unlock the Unit Lock Lever but will disable Drawer release.

U.L.L. CONTROL-(C-52)


TRANSACTION KEY FRAME
LOCK LEVER CONTROL ARM 51A25624
LOCK LEVER CONTROL LINE 51A25628
X & Z LOCKOUT SEGMENT 51B35451
DETENT ARM 51A25618
MOTORIZED DETENT-51B28265

Whenever a key in Row 1 or 2 is used, the Motorized Detent 51B28265 will be cammed down. This turns the Detent Arm 51A25618 top to the back and the extension on this arm will contact the Roll on the Lock Lever Control Arm carrying it down in front and turn the Lock Lever Control Line top to the front.

The Locking Link Control Arm 51A25626 pinned to the left end of this line, will move bottom to the back and carrying the Locking Arm Link 51A25798 back.

This link will turn the Lever Locking Arm top to the back preventing the Unit Lock Lever from being moved until the Key is released.

When the Unit Lock Lever is moved to the Lock Register Position, a high part of the X and Z Lockout Segment 51B35451 is moved in the path of the stud on the back of the Lock Lever Control Arm 51A25624. This prevents fully depressing the Row 1 or 2 keys.

ADJUSTMENT

The Eccentric in the Indicator Liner Arm 51A2900 should be adjusted to give clearance between the stud in the Locking Cam Arm and high surface of the Lock Lever Segment when the Indicator Liner Arm has received its full movement down in back (home to 1/8 turn of the handle).

Adjust the eccentric in the Lever Locking Arm for .035 clearance between the stud in this arm and the Lock Line Control Arm, with the stud in the Locking Cam Arm against the medium surface of the Lock Lever Segment.

After making this adjustment, check to see that the stud in the Lever Locking Arm is in the path of the Lock Line Control Arm after an Item Operation and also when a Row 1 or 2 key is pressed.

SECTION "Q"

SLIP PRINTER

SLIP PRINTER

There are various models of the Slip Printer on the C-52. Basically, they are the same with some exceptions. For this explanation, the "G" Printer will be covered. The exceptional features of the various other Slip Printers will also be covered under other sections of this manual.

The "G" type Slip Printer is selected for double impression with the Unit Lock Lever in the "Register" position. Out of "Register" it is automatically selected for single impression.

The amount, consecutive number, full date print and a three wheel register or store number will be printed on the slip on a Total operation only.

A Slip Printer is disabled on all Item operations.

This type Printer is constructed with Closed Feed Rolls. This makes it necessary to depress the "No Receipt" key before starting the itemizing. This disables the Receipt and holds the Feed Rolls open so that the slip can be inserted to receive the impression on a Total operation.

Otherwise, in the event the "No Receipt" key is not depressed, the Slip Feed Rolls will close on the first Item operation and remained closed and it will be impossible to insert a slip on the Total operation.

The impression and feed of the slip is controlled by Selection Plates which can be set for single or double impression and single or double space between the prints on the slip.

To receive the print on the slip, the "No Receipt" key must be pressed and a slip must be inserted in the slip printer. On multiple Item operations with the "No Receipt" key depressed and a slip inserted, the slip Mechanism is disabled by the Control Plate located on the Receipt and Detail Printer

The movement of this Control Plate is controlled by the Unit Lock Lever and the Row 1 Transaction keys.

Disabling The Receipt - "No Receipt" Key Depressed

As the "No Receipt" Key is depressed, a half-round stud in the front extension of the "No Receipt" key cams past the Slip Key Latch. Spring tension carries the Slip Key Latch over the stud, retaining the key until the Key Lock Line restores.

When the "No Receipt" Key is depressed, the Control Plate Link, attached to the rear extension of the "No Receipt" Key, moves the Printer Control Plate up in the back. The Printer Control Plate takes a position in the path of the stud of the Printer Control Arm. At 3/8 turns of the handle, the stud in the Printer Control Arm contacts the Printer Control Plate stopping the Printer Control Links (impression and feed) disabling the Receipt.

At the same time the "No Receipt" Key was depressed, the Non-Trip Arm Link was moved down in the path of the half round stud in the Lock Line Trip Arm on the Key Lock Line, preventing the Key Lock Line from tripping with the "No Receipt" Key partially depressed. When the key is fully depressed, the Non-Trip Arm is below the half round stud, permitting the Key Lock Line to trip.

Releasing The "No Receipt" Key

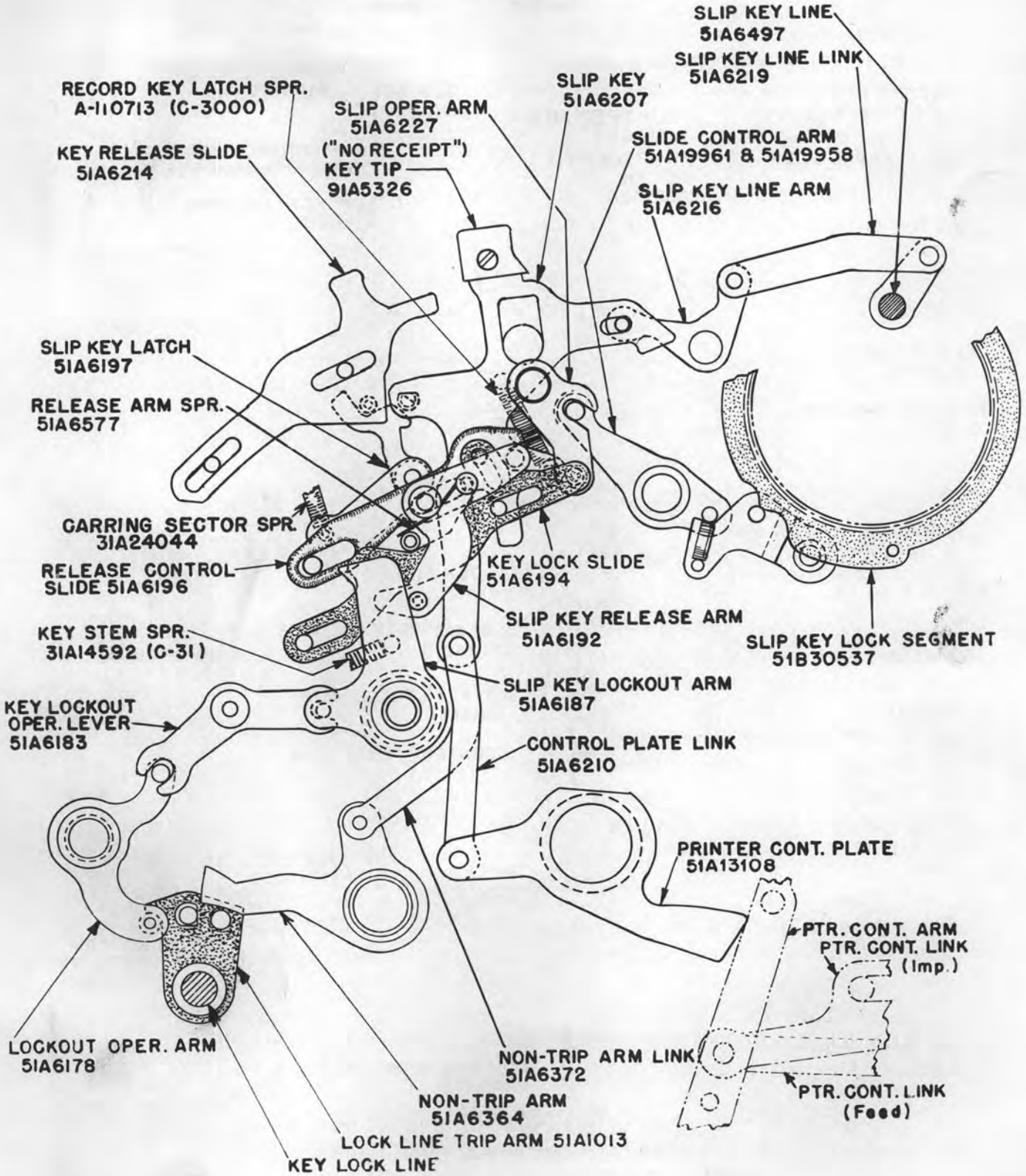
The Key Lock Line restores top to the front at 1-3/4 turns of the handle. The Lock Line Trip Arm pinned to the Key Lock Line, contacts the stud in the Lockout Operating Arm moving the arm top to the back. The Key Lockout Operating Lever moves the Slip Key Lockout Arm top to the back. The Slip Key Lockout Arm contacts the stud in the Slip Key Release Arm moving the arm up in back. A stud in the arm raises up on the back end of the Release Control Slide and the raceway in the front end of the slide yoking a stud in the Slip Key Latch, will move the Latch from over the half round stud in the key, permitting spring tension to fully restore the key.

When the key is restored, it also restores the Printer Control Plate down and out of the path of the stud in the Printer Control Arm. The Non-Trip Arm is restored above the stud in the Lock Line Trip Arm.

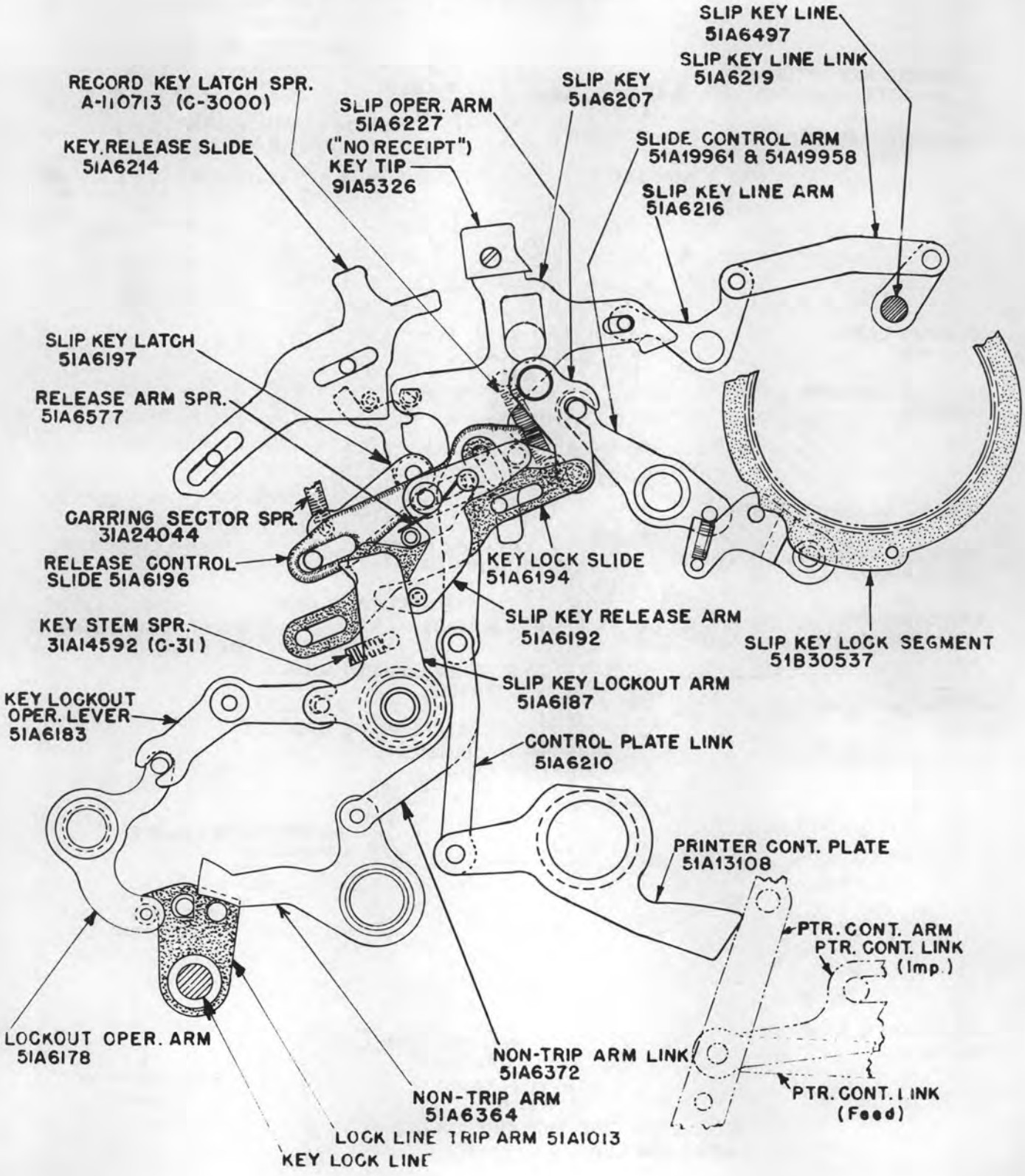
When the Lock Line is restored, the Key Stem Spring restores the Slip Key Lockout Arm, the Key Lockout Operating Lever and the Lockout Operating Arm.

The Slip Key can be retained in a depressed position by moving the Key Release Slide to the back, placing the slide over the Slip Key.

"NO RECEIPT" KEY MECHANISM



"NO RECEIPT" KEY MECHANISM


SLIP KEY LINE 51A6497
SLIP KEY LINE LINK 51A6219
RECORD KEY LATCH SPR. A-110713 (C-3000)
SLIP OPER. ARM 51A6227
SLIP KEY 51A6207
KEY RELEASE SLIDE 51A6214
("NO RECEIPT") KEY TIP 91A5326
SLIDE CONTROL ARM 51A19961 & 51A19958
SLIP KEY LINE ARM 51A6216
SLIP KEY LATCH 51A6197
RELEASE ARM SPR. 51A6577
CARRING SECTOR SPR. 31A24044
RELEASE CONTROL SLIDE 51A6196
KEY LOCK SLIDE 51A6194
KEY STEM SPR. 31A14592 (C-31)
SLIP KEY RELEASE ARM 51A6192
SLIP KEY LOCK SEGMENT 51B30537
SLIP KEY LOCKOUT ARM 51A6187
KEY LOCKOUT OPER. LEVER 51A6183
CONTROL PLATE LINK 51A6210
PRINTER CONT. PLATE 51A13108
PTR. CONT. ARM
PTR. CONT. LINK (Imp.)
LOCKOUT OPER. ARM 51A6178
NON-TRIP ARM LINK 51A6372
NON-TRIP ARM 51A6364
PTR. CONT. LINK (Feed)
LOCK LINE TRIP ARM 51A1013
KEY LOCK LINE

"No Receipt" Key Locking Mechanism

The "No Receipt" key is locked in the depressed or restored position by the Slip Key Lock Segment, which is controlled from Row 1. On a multiple item operation, the camming surface of the Slip Key Lock Segment moves the Slide Control Arm 51A19961 down in front. The Slip Operating Arm moves the Key Lock Slide to the front positioning the projection on the slide under the stud in the Slip Key Latch.

As the Key Lock Slide moves to the front, a stud in the slide moves the Release Control Slide to the front, moving the back extension on the Release Control Slide from over the stud in the Slip Key Release Arm. When the Key Lock Line is restored, the Key Release Arm gives no movement to the Release Control Slide.

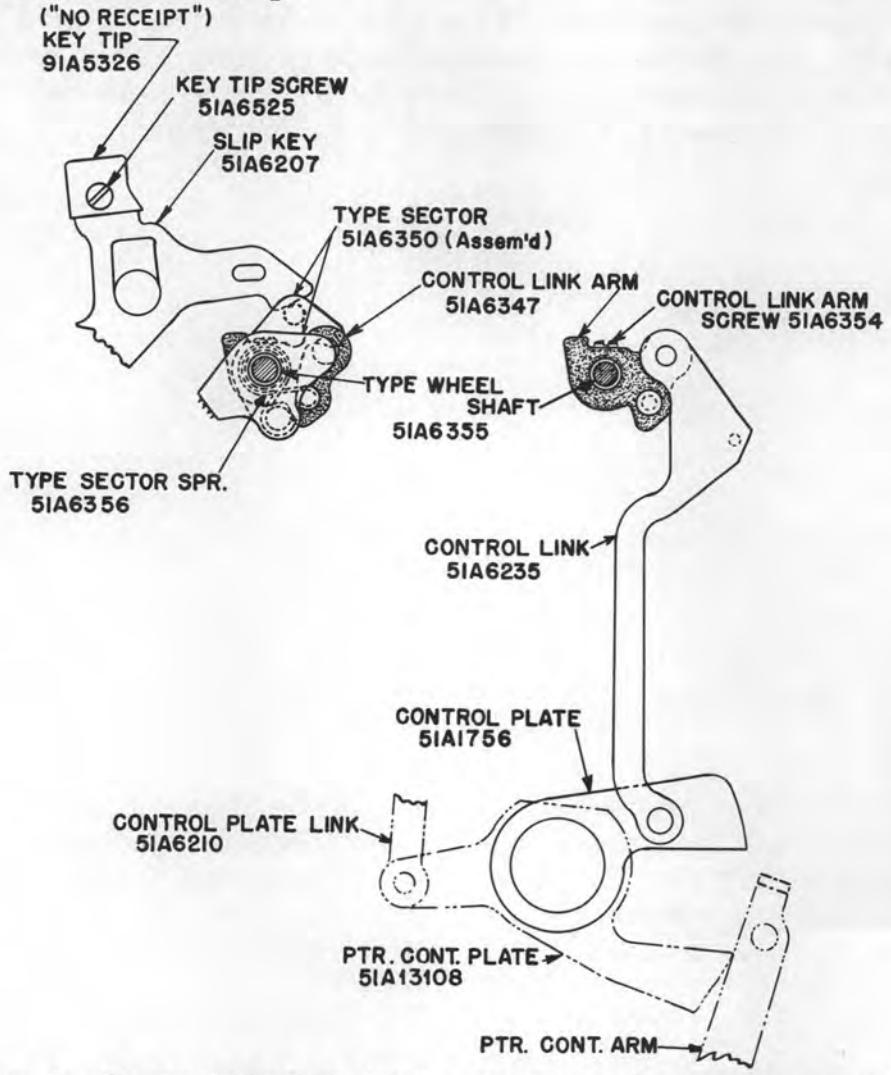
When a key is Row 1 is used to complete the multiple item operation, the Slip Key Lock Segment moves the Slide Control Arm 51A19961 up in front. The Slip Operating Arm moves the Key Lock Slide to the back, moving the projection of the slide from under the stud in the Slip Key Latch, and the Release Control Slide is again placed over the stud in the Slip Key Release Arm. When the Key Lock Line restores, the Slip Key is released and is restored by spring tension.

Type Sector Control - "No Receipt"

On the C-52 registers with R and S Printers, the four line type sector is controlled by the On and Off knob and the "No Receipt" key. With the On and Off Knob in the "Off" position, or when the "No Receipt" key is depressed, the four line type sector is able to print four lines on the Detail Strip indicating no receipt was issued on that operation. With the On and Off knob in the "On" position, the four line Type Sector is disabled providing the "No Receipt" key is not depressed.

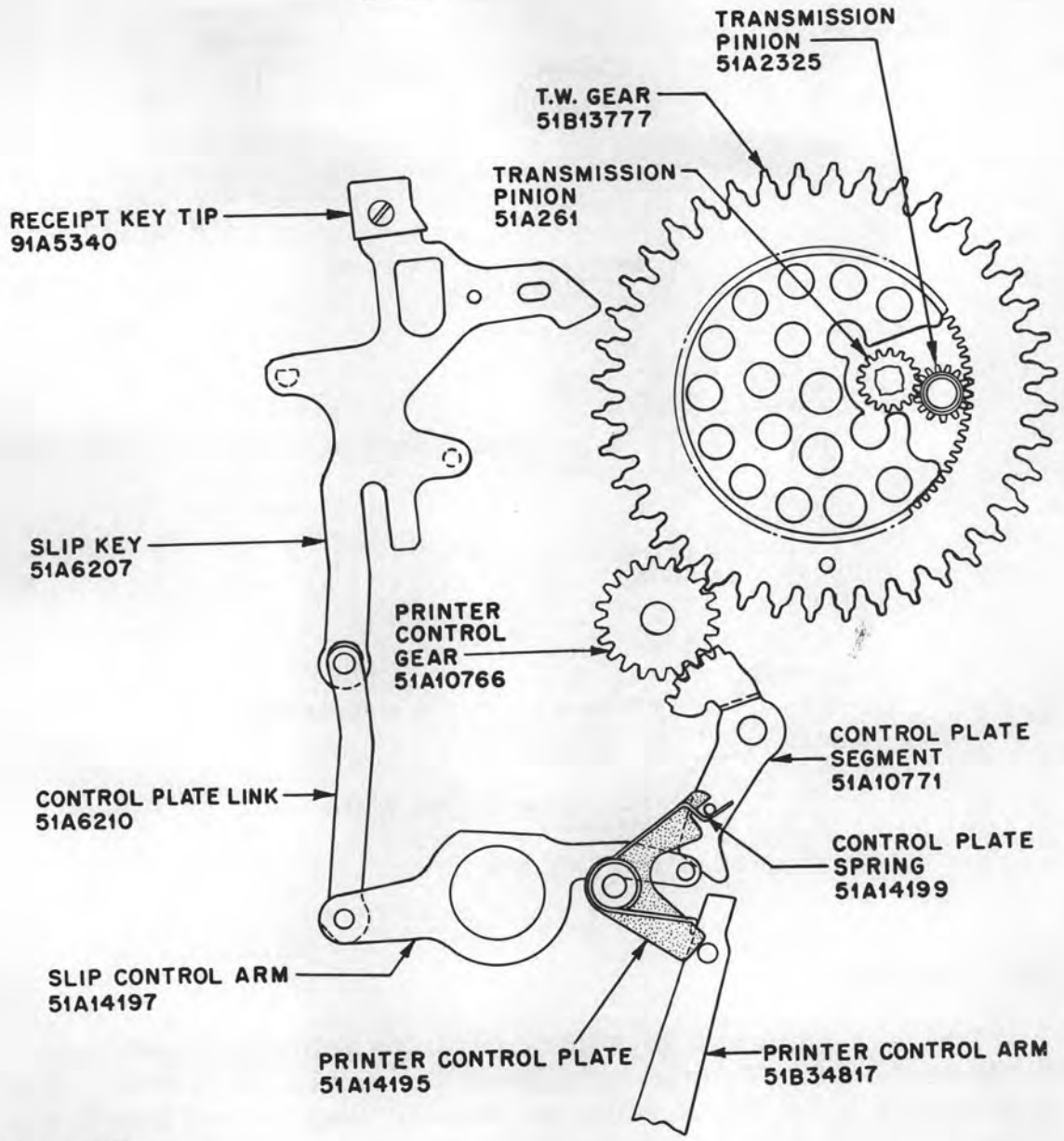
As the "No Receipt" key is depressed, the upper back extension on the key contacts a stud in the type sector lowering the back and raising the front end up in the path of the Detail Hammer. Spring tension is stored up between the Type Sector and the Control Link Arm. If the Control Knob is in the "Off" position, the depressing of the "No Receipt" key has no effect on the Type Sector.

When the "No Receipt" key restores, the upper back extension of the "No Receipt" key moves away from the stud in the Type Sector permitting Spring Tension to restore the front end of the sector below the print line on the detail strip.



When the Control Knob is turned to the "off" position, the lower extension of the Control Link Arm contacts a stud in the type sector raising it up in front to the printing line.

RECEIPT KEY MECHANISM
(C-52)



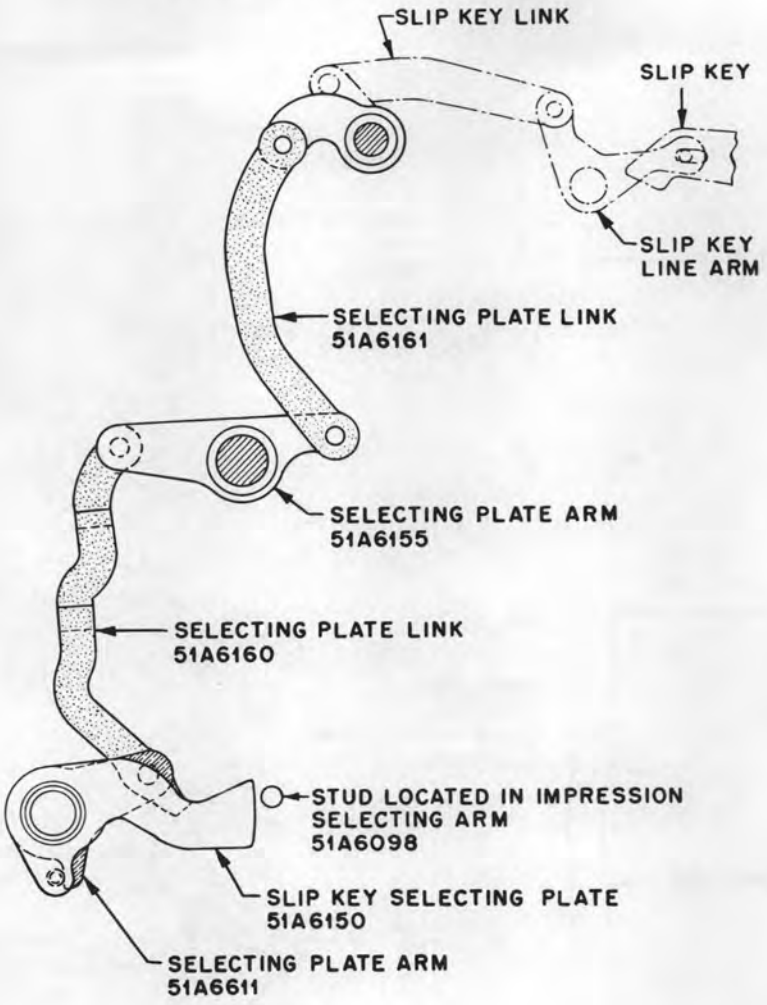
Receipt Key

The function of the Receipt Key on a Slip Printer machine is to able the receipt mechanism with the Sales Slip inserted on the Slip Table. This key is normally used on machines that are constructed for receipt and slip.

At the end of each operation, the Slip Segment is held top to the front and through the transmission the "S" Wheel Type Segment is held top to the frontholding the "S" Type Wheel on the Detail Type Line. Through the Idler Gear, the Control Plate Segment holds the Printer Control Plate 51A14195 in the path of the stud and the Printer Arm disabling the receipt.

When the Receipt Key is depressed, the Control Plate Link will move the Slip Key Control Arm 51A14197 up in the back. The stud in the rear portion of this arm will move the Printer Control Plate up in the back out of the path of the stud in the Printer Control Arm abling the Receipt mechanism.

SALES SLIP KEY


SLIP KEY LINK
SLIP KEY
SLIP KEY LINE ARM
SELECTING PLATE LINK 51A6161
SELECTING PLATE ARM 51A6155
SELECTING PLATE LINK 51A6160
STUD LOCATED IN IMPRESSION SELECTING ARM 51A6098
SLIP KEY SELECTING PLATE 51A6150
SELECTING PLATE ARM 51A6611

Sales Slip Key

There are different keys that control the abling and disabling of the Receipt and Slip Printer. The Sales Slip Key is one of these. It is used in place of the "No Receipt" or "Receipt" key on the Class 52 Slip Printer. The purpose of this key is to control the printing on the inserted Sales Slip. The only time that an impression is made on the Sales Slip is when this key is depressed.

The "Sales Slip" Key mechanism is identical to the "No Receipt" key with the exception in the Slip Printer Assembly.

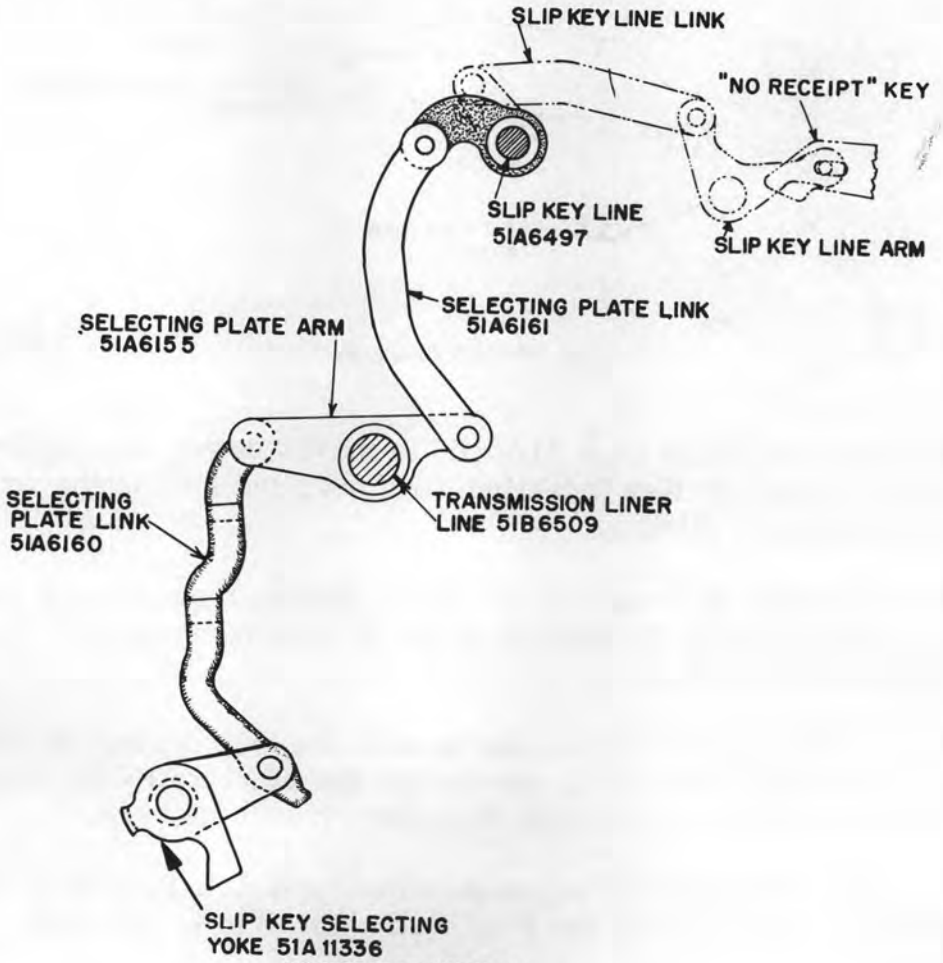
The retaining and releasing of this key is accomplished in the same manner as the "No Receipt" key.

When the "Sales Slip" key is depressed, the Slip Key Line Arm is moved down in the front carrying the Slip Key Line Link to the front. The Slip Key Line is occilated top to the front and moves the Selecting Plate Link up causing the Selecting Plate Arm to move down in the back. This will cause the Selecting Plate Link and Selecting Plate Arm to move down. As the Selecting Plate Arm moves down, it contacts a stud in the Slip Key Selecting Plate which moves the front projection of the plate below and out of the path of the stud in the Impression Selecting Arm.

Since the "Sales Slip" key is locked down during a multiple item operation and does not restore until the end of a total operation, the Slip Key Selecting Plate remains out of the path of the stud in the Impression Selecting Arm until the "Sales Slip" Key restores.

When the key restores, the Slip Key Selecting Plate is also rextored by spring tension moving the front extension up in the path of the stud in the Impression Selecting Arm.

The Impression Selecting Arm controls the positioning of the Slip Impression Pitman, single and double print on the slip. The Impression Selecting Arm is controlled by the Unit Lock Lever, the Slip Feeler and the Keys in the Transaction Keybanks.


SLIP KEY LINE LINK
"NO RECEIPT" KEY
SLIP KEY LINE 51A6497
SLIP KEY LINE ARM
SELECTING PLATE LINK 51A6161
SELECTING PLATE ARM 51A6155
SELECTING PLATE LINK 51A6160
TRANSMISSION LINER LINE 51B6509
SLIP KEY SELECTING YOKE 51A11336

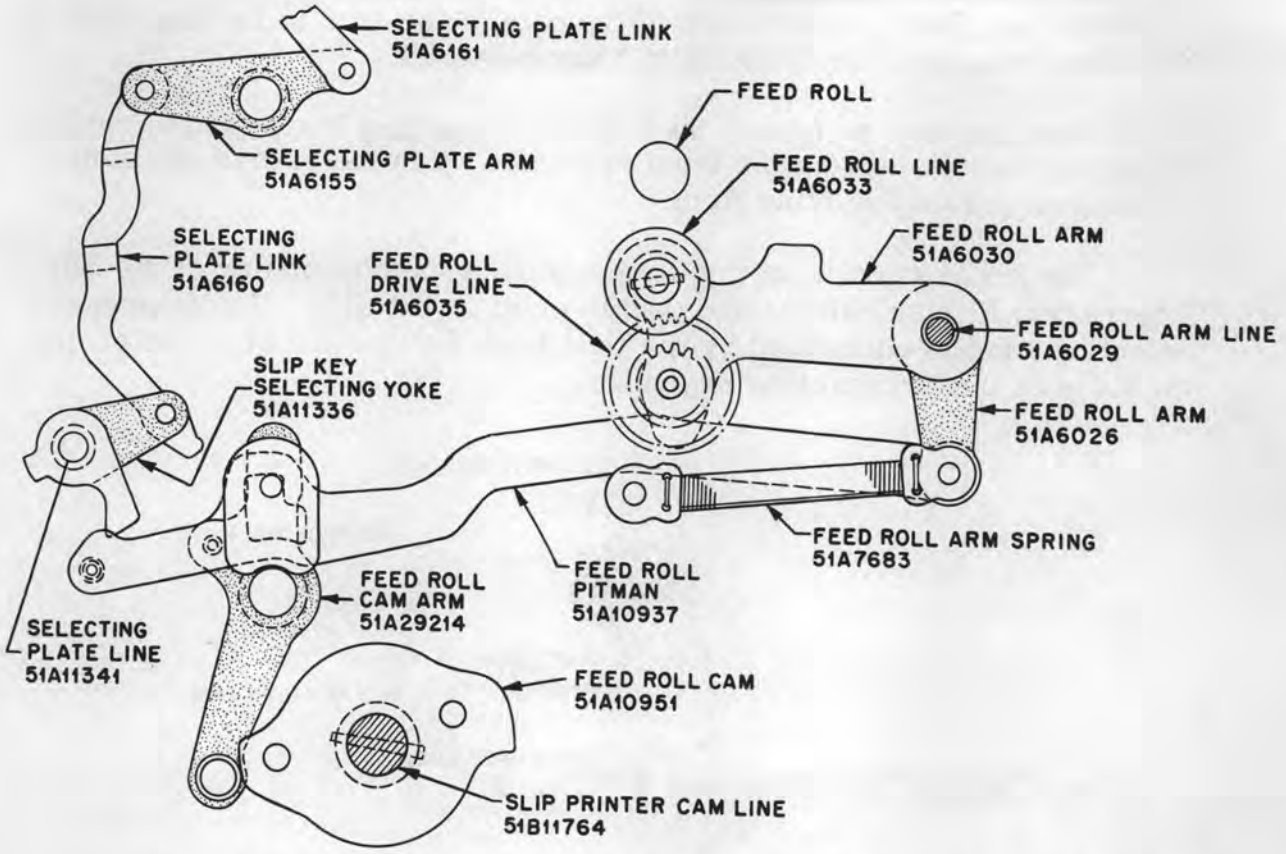
SLIP TENSION

"No Receipt" Key Control - Item Operation

When the "No Receipt" key is depressen prior to itemizing, the slot in the rear portion of the key causes the Slip Key Line Arm to move top to the back.

Through the Slip Key Line Link, the Slip Key Line is oscillated top to the back. The arm pinned to the extreme left end of this line is turned top to the back moving the Selection Plate Arm through the Selecting Plate Link top to the back.

SLIP TENSION MECHANISM
(NO RECEIPT KEY CONTROL)



The Selecting Plate Link 51A6160 is moved down, moving the left hand portion of the Slip Key Selecting Yoke over the stud in the rear portion of the Feed Roll Pitman.

This prevents the rear portion of the Pitman from moving up so that the working part of the opening in the Pitman remains over the stud in the Feed Roll Cam Arm.

From home to 1/8 Turn of the handle, the high portion of the Slip Feed Cam will move away from the roll on the Feed Roll Cam Arm. Spring tension on this arm causes it to move top to the back.

The Feed Roll Arm Spring causes the Feed Roll Pitman to follow the stud in the upper part of the Feed Roll Cam Arm to the back.

The Feed Roll Line is turned top to the front closing the Feed Rolls.

From 3/4 to 5/8 turns of the handle, a high surface of the Slip Feed Cam will cause the Feed Roll Cam Arm to move top to the front.

The stud of the upper end of the Arm moves the Feed Roll Pitman to the front opening the Feed Rolls.

Between 1 and 1-1/4 turn of the handle, the Feed Roll Cam Arm is again allowed to move top to the back. The Feed Rolls are closed and between 1-3/4 and 2 turns of the handle, a high surface of the cam will cause the cam arm to move to the front opening the Rolls.

"No Receipt" Key Restored - Item Operation

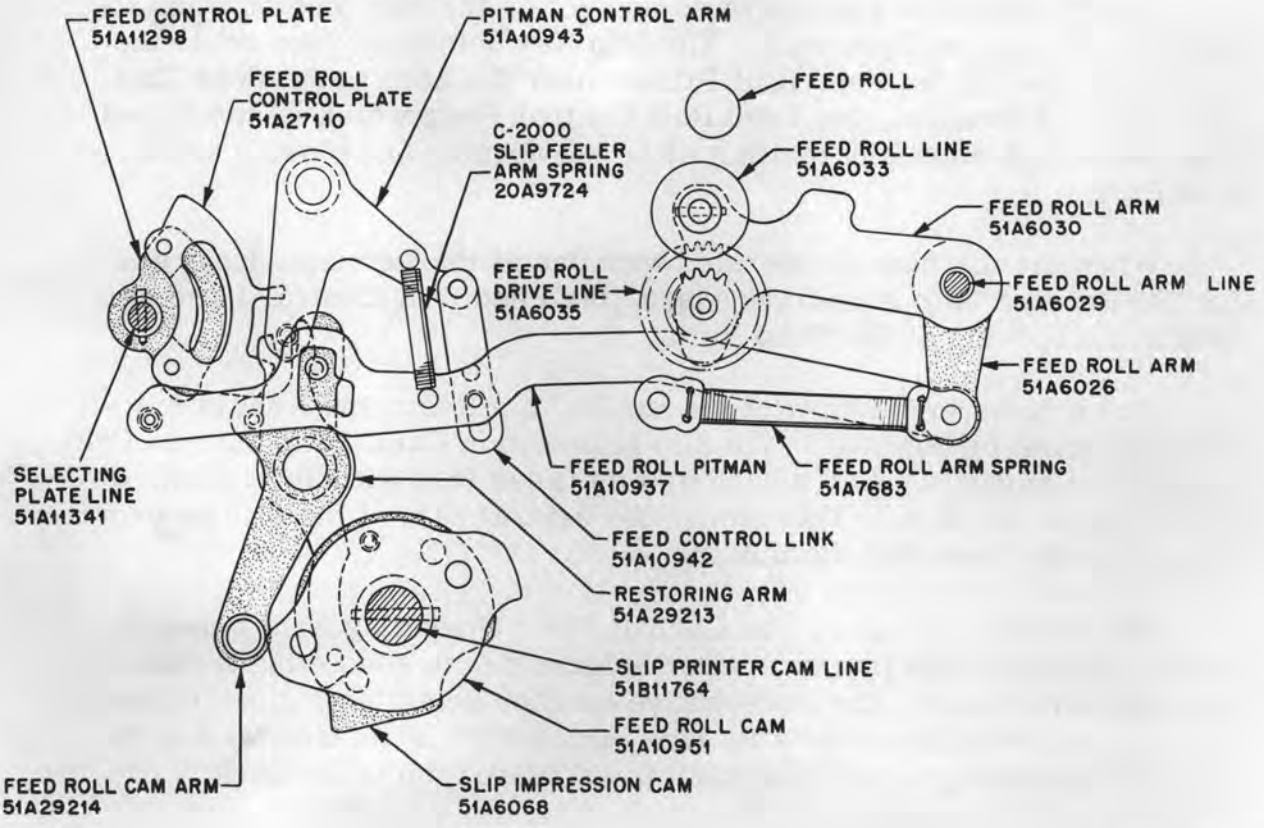
When the "No Receipt" key is not depressed prior to itemizing, the Slip Feed Rolls will be closed and will not be opened until a Total operation is made.

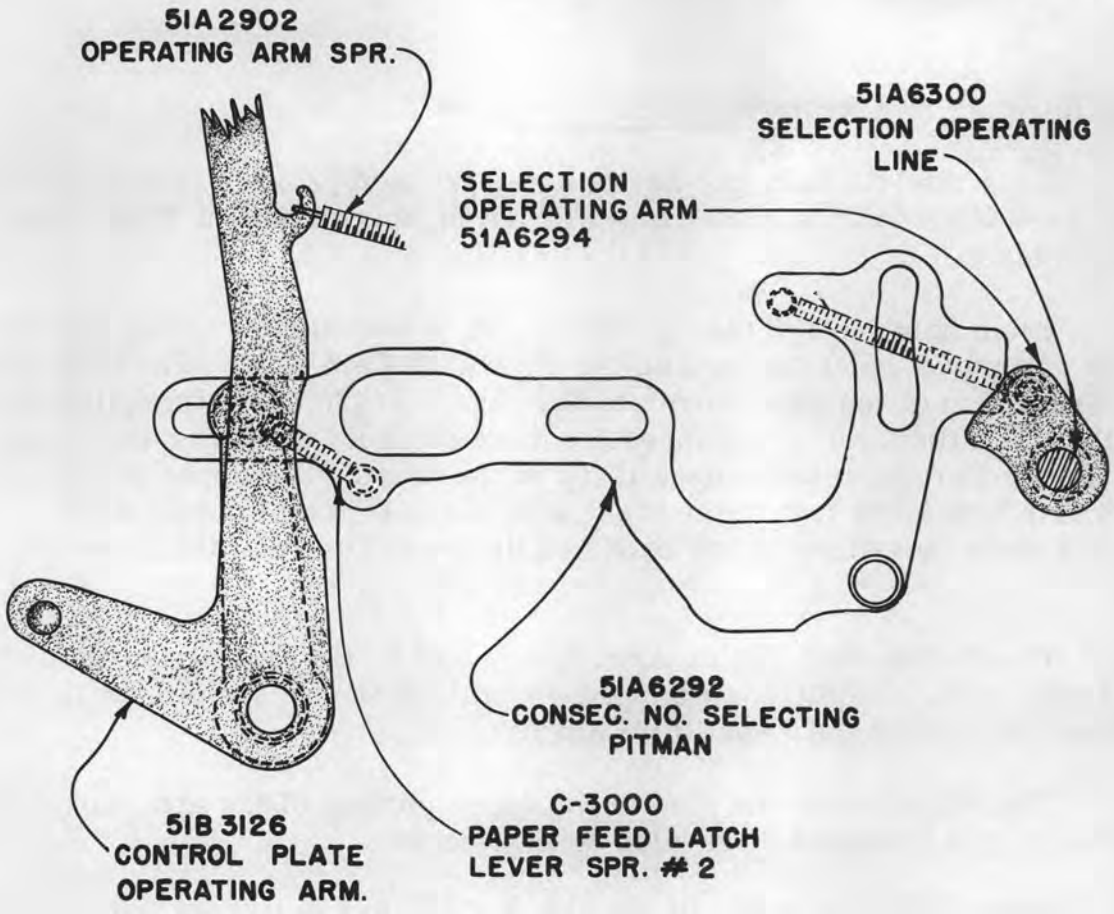
From home to 1/8 turn of the handle, a low surface of the Slip Feed Cam will move under the roll on the Feed Roll Cam Arm. The stud in the upper portion of the Arm moves to the back. At the same time, the stud in the left side of the Slip Impression Cam contacts the lower leg of the Restoring Cam Arm and moves it top to the front. The upper portion of this arm yokes the stud in the right side of the Pitman Control Arm. This arm is moved top to the back and the Feed Control Link is moved up.

The C-2000 Slip Feeler Arm Spring will cause the Pitman to move up in the back. In this position, the neutral portion of the pitman is placed around the stud in the Feed Roll Cam Arm.

Therefore, when the stud in the upper portion of the arm moves to the back, the Pitman will receive no movement.

When the high portion of the Slip Feed Cam again comes under the roll on the Feed Roll Cam Arm and moves it top to the front, the stud in the upper part of the arm will ride in the neutral part of the pitman and give it no movement. Therefore, the Feed Rolls will remain closed until the Total operation is made.





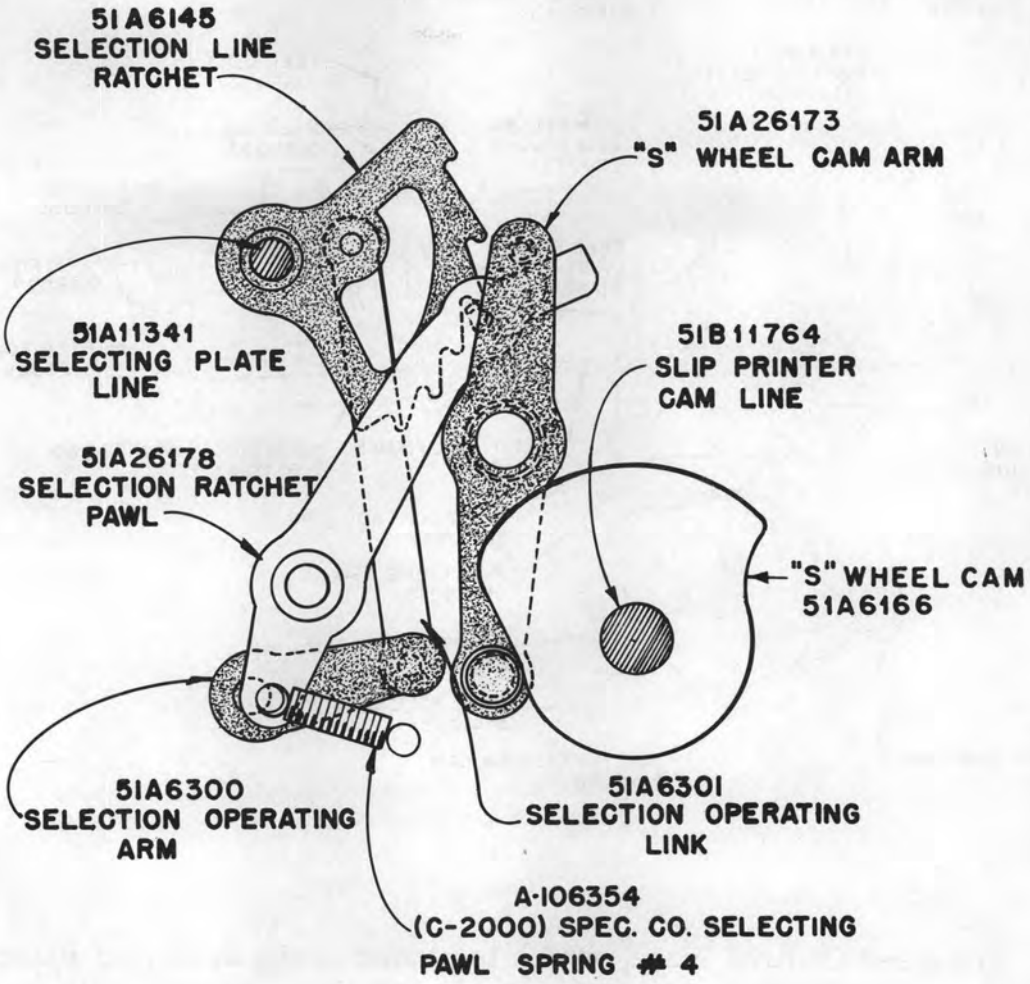
Transaction Key Control - Item Operation

The Transaction Keys have no control on the slip tension when the "No Receipt" key is depressed. The Slip Key Selecting Yoke holds the working portion of the Feed Roll Pitman over the Stud in the Feed Roll Cam Arm. Therefore, the Feed Roll Control Plate which is controlled from the Transaction Key will not alter the opening and closing of the Feed Roll.

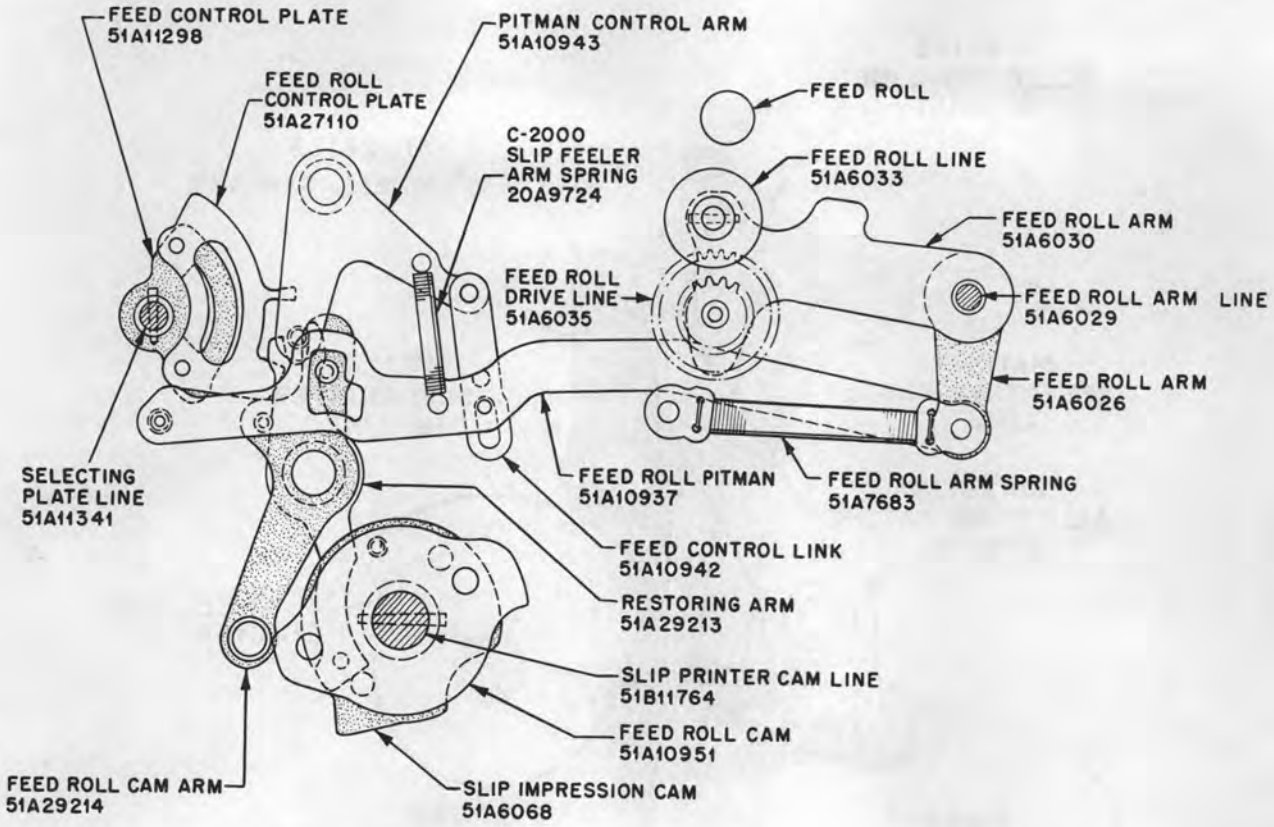
When the machine is operated with one of the Itemizing Keys and the "No Receipt" key is not depressed, the Feed Roll Control Plate will disable the opening of the Feed Rolls.

From home to 1/8 turn of the handle, the Restoring Arm is moved top to the front by the stud in the Slip Impression Cam. The Pitman Control Arm is moved top to the back and the Feed Roll Pitman is allowed to move up in the back. This places the neutral part of the pitman over the stud in the Feed Roll Cam Arm.

On an Item operation, the Control Plate Operating Arm moves to the back until stopped by the Printer Selecting Arm contacting a stud on the right side frame. The consecutive number Selecting Pitman contacts a Stud on the Selecting Operating Line Arm which is set-screwed to the Selection Operating Line. The Line is oscillated top to the back.



Pinned to the left end of the Selecting Operating Line is a Selecting Operating Arm which will be turned top to the back moving the Selecting Operating Link up. The upper portion of the link is connected to the Selection Line Ratchet which is pinned to the Selecting Plate Line. The Selection Line Ratchet and Line will be turned top to the back.



The Feed Control Plate, which is pinned to the Selecting Plate Line, has high and low surfaces on it that work with the stud in the Pitman Control Arm. The high surface of the Feed Control Plate will be positioned in the path of the Stud in the Pitman Control Arm.

When the stud in the Slip Printer Cam moves away from the lower leg of the Restoring Arm, the Spring Tension on the Pitman Control Arm will move it top to the front until the Stud in the Arm contacts the high surface of the Feed Roll Control Plate. This holds the Feed Roll Pitman up in the back and the neutral part of the pitman will remain in the stud of the Feed Roll Cam Arm.

The Slip Feed Rolls will remain closed until the Total operation is made.

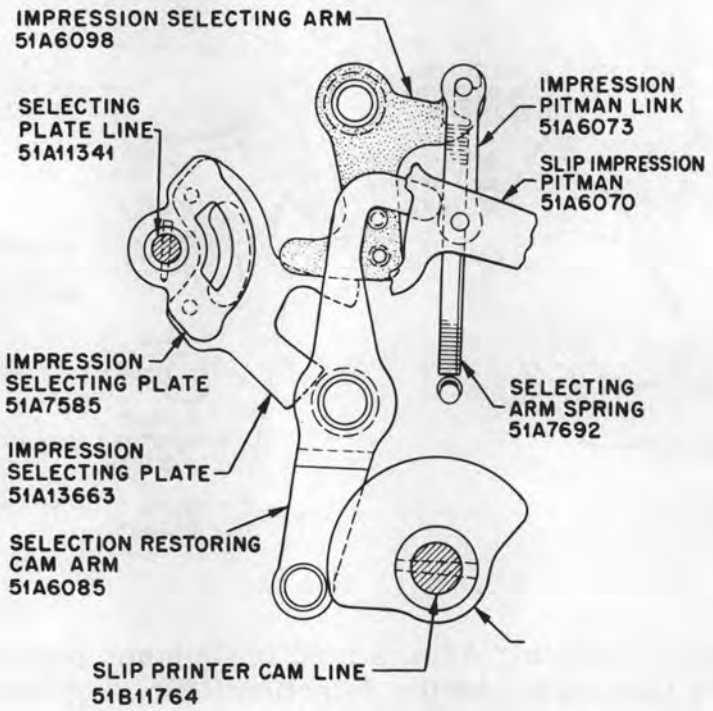
Transaction Key Control - Total Operation

When a Total key in Row 1 is depressed to complete the transaction the Printer Selecting Arm is stopped by one of the Printer Selecting Pawls.

The consecutive number Selecting Pitman, the Selecting operating Line and the Selection Plate Line will receive some movement. A low surface of the Feed Roll Control Plate is positioned in the path of the stud in the pitman Control Arm.

When the stud in the Slip Impression Cam moves away from the lower leg of the Restoring Arm, Spring Tension on the Pitman Control Arm will cause it to move top to the front.

The Feed Roll Pitman is lowered, placing the working part over the Stud in the Feed Roll Cam Arm. The Feed Rolls will be opened at the end of the operation.



IMPRESSION

Transaction Key Control - Item Operation

On an Item Operation with the "No Receipt" key depressed, the Impression Mechanism is disabled by the Transaction Keys.

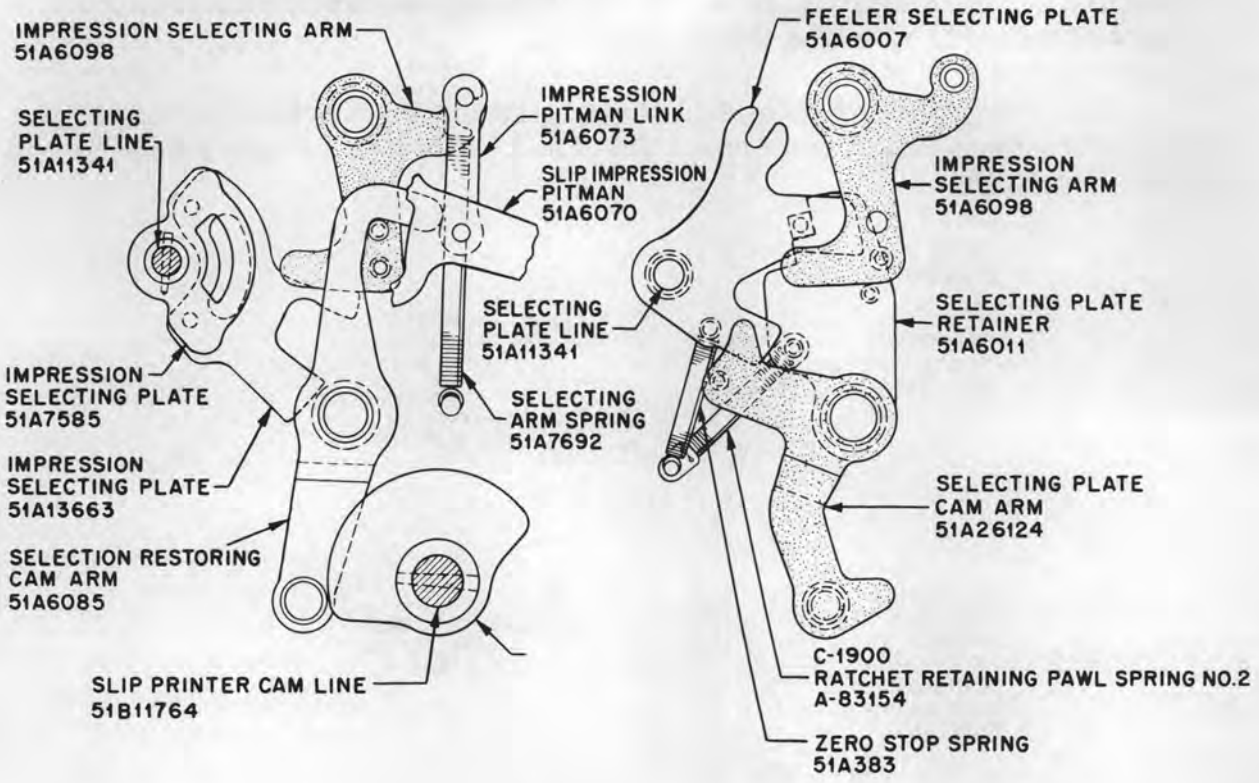
From 1/8 to 3/8 turn of the handle, the Control Plate Operating Arm moves top to the back until the Printer Selecting Arm is stopped by the stud located in the left side frame.

The Consecutive Number Selecting Pitman is moved to the back by the Control Plate Operating Arm. The back form portion contacts the stud in the arm set-screwed to the right end of the Selection Operating Line. The line will turn top to the back.

The Selecting Operating Arm which is pinned to the left end of the Line is moved top to the back moving the Section Operating Link up. The upper end of the link is connected to the Selecting Line Ratchet which is pinned to the Selection Plate Line. The ratchet and line will be turned top to the back.

The Impression Selecting Plate is also pinned to the Selecting Plate Line and will be moved top to the back so that a high surface of the plate will be positioned in back of the stud in the Impression Selecting Arm.

IMPRESSION CONTROL TRANSACTION KEY AND SLIP FEELER

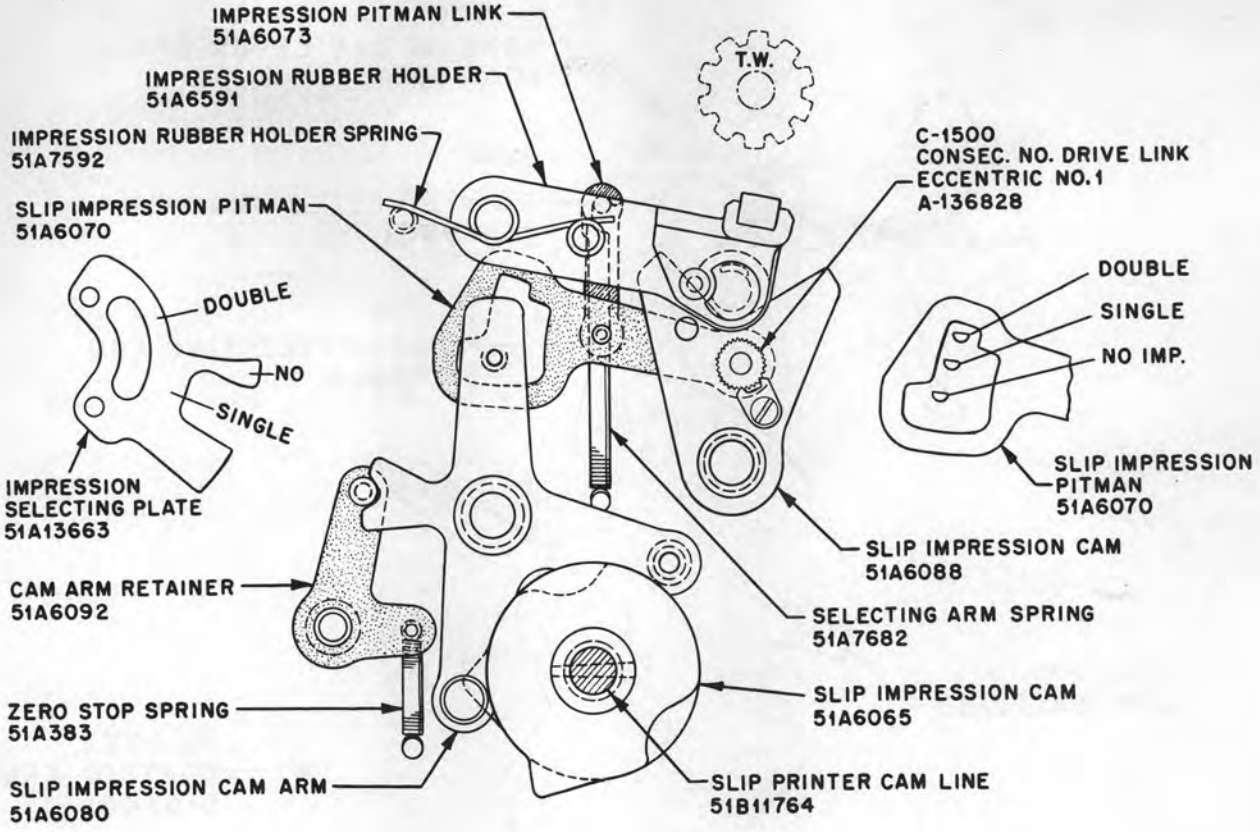


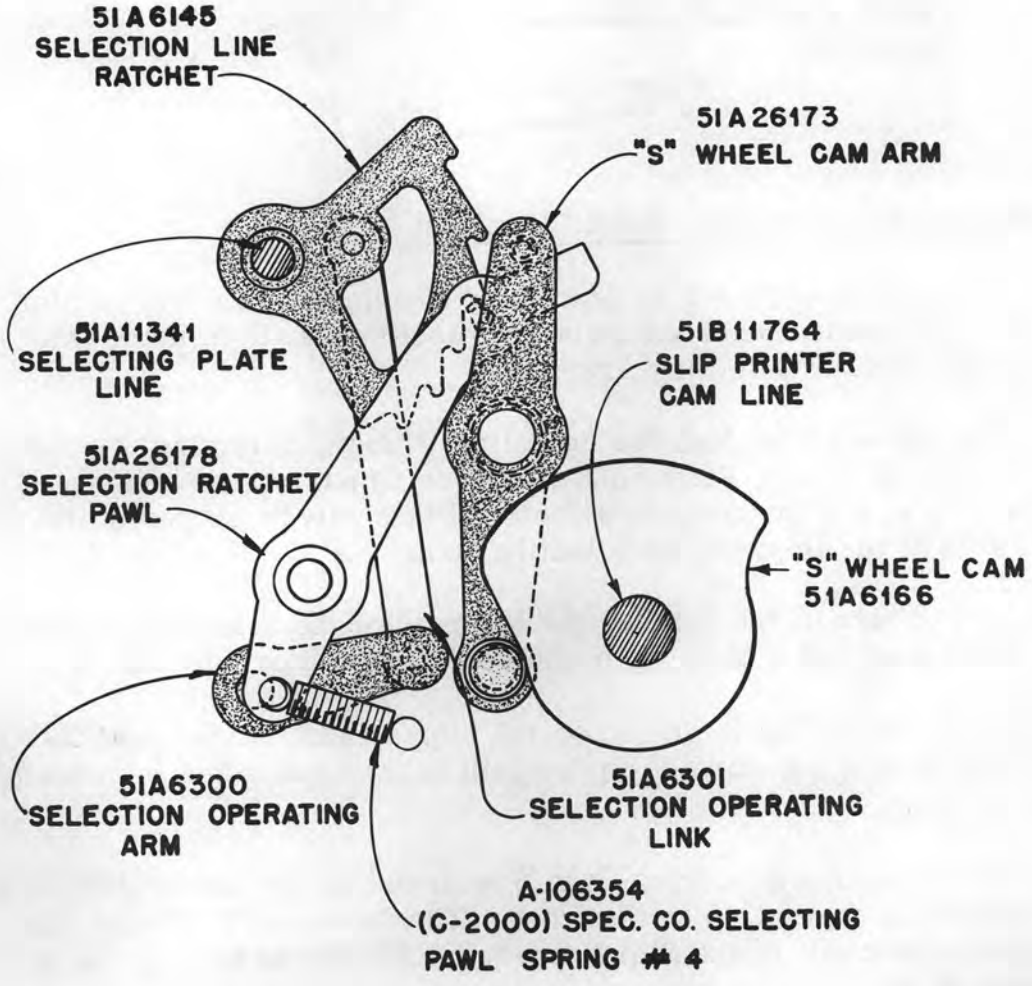
The Impression Selecting Arm is held in its home position by the Selecting Restoring Cam Arm and the Selection Restoring Cam. At approximately 7/8 turns of the handle, the low part of the Selection Restoring Cam will move under the roll in the Selection Restoring Cam Arm. The Arm is free to move away from the stud in the Impression Selecting Arm.

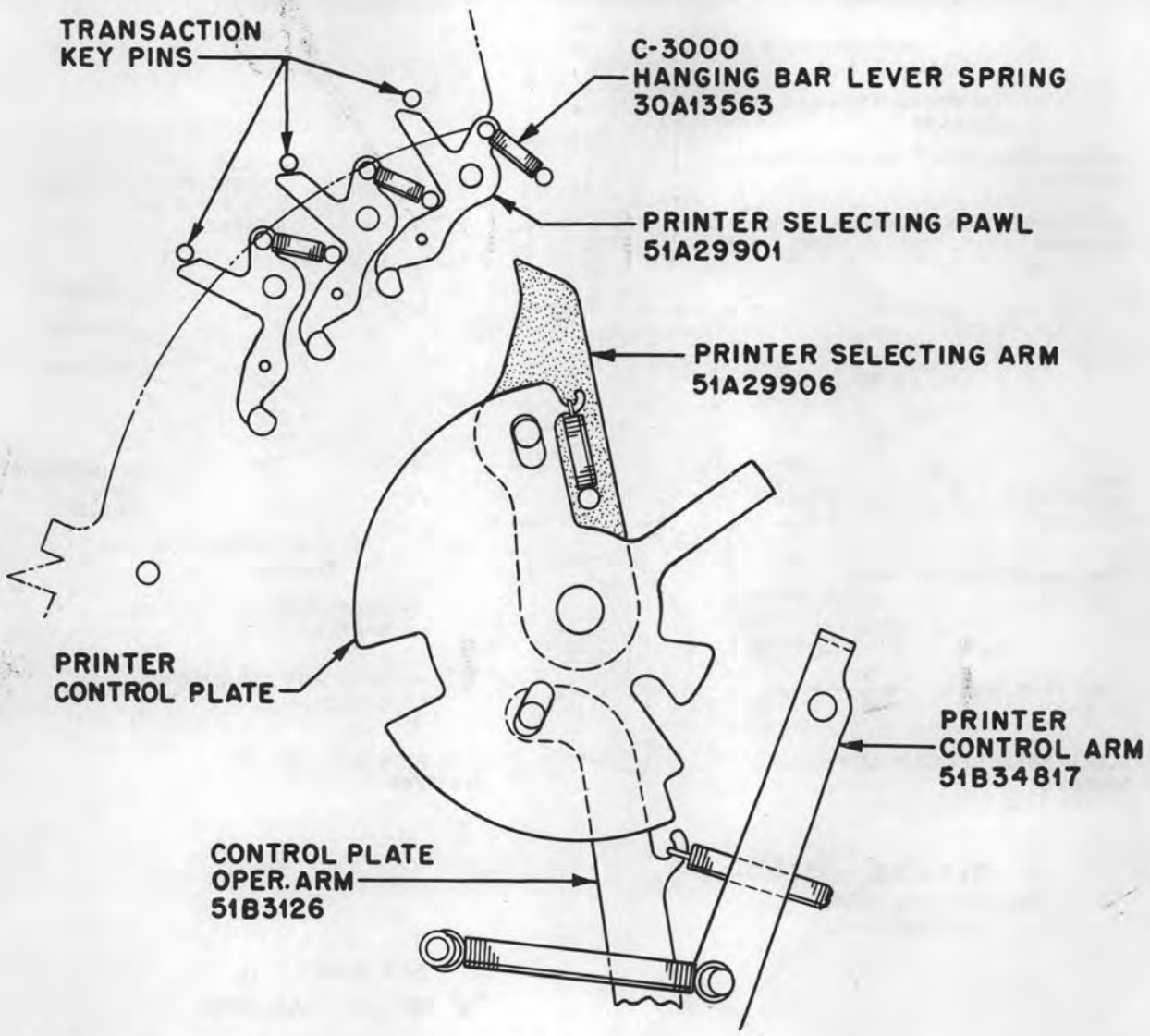
The Impression Selecting Arm is held up in a disabled position by the Impression Selecting Plate and the Feeler Selecting Plate which is controlled from the Slip Feeler. Through the Impression Selecting Link, the Slip Impression Pitman is held up so that the neutral part is over the stud in the Slip Impression Cam Arm. Therefore, when the Cam Arm is moved by the Slip Impression Cam, the Slip Impression Pitman will receive no movement.

The Selecting Plate Line is retained by the stud in the Selection Ratchet Pawl locking into the teeth of the Selection Line Ratchet.

From 3/8 to 1/2 turn of the handle, the stud in the S-Wheel Cam Arm contacts the upper end of the Selection Ratchet Pawl moving the stud in the pawl out of the teeth of the Selection Line Ratchet, freeing up the Selecting Plate Line. The Line is restored by the Spring between the Arm set screwed to the right end of the Selection Operating Line and the Consecutive Number Selecting Pitman.


IMPRESSION PITMAN LINK
51A6073
IMPRESSION RUBBER HOLDER
51A6591
IMPRESSION RUBBER HOLDER SPRING
51A7592
SLIP IMPRESSION PITMAN
51A6070
T.W.
C-1500
CONSEC. NO. DRIVE LINK
ECCENTRIC NO.1
A-136828
DOUBLE
NO
SINGLE
IMPRESSION
SELECTING PLATE
51A13663
DOUBLE
SINGLE
NO IMP.
SLIP IMPRESSION
PITMAN
51A6070
SLIP IMPRESSION CAM
51A6088
CAM ARM RETAINER
51A6092
SELECTING ARM SPRING
51A7682
SLIP IMPRESSION CAM
51A6065
ZERO STOP SPRING
51A383
SLIP IMPRESSION CAM ARM
51A6080
SLIP PRINTER CAM LINE
51B11764


51A6145
SELECTION LINE
RATCHET
51A26173
"S" WHEEL CAM ARM
51A11341
SELECTING PLATE
LINE
51B11764
SLIP PRINTER
CAM LINE
51A26178
SELECTION RATCHET
PAWL
"S" WHEEL CAM
51A6166
51A6300
SELECTION OPERATING
ARM
51A6301
SELECTION OPERATING
LINK
A-106354
(C-2000) SPEC. CO. SELECTING
PAWL SPRING # 4


TRANSACTION KEY PINS
C-3000 HANGING BAR LEVER SPRING 30A13563
PRINTER SELECTING PAWL 51A29901
PRINTER SELECTING ARM 51A29906
PRINTER CONTROL PLATE
PRINTER CONTROL ARM 51B34817
CONTROL PLATE OPER. ARM 51B3126

Transaction Key Control - Total Operation

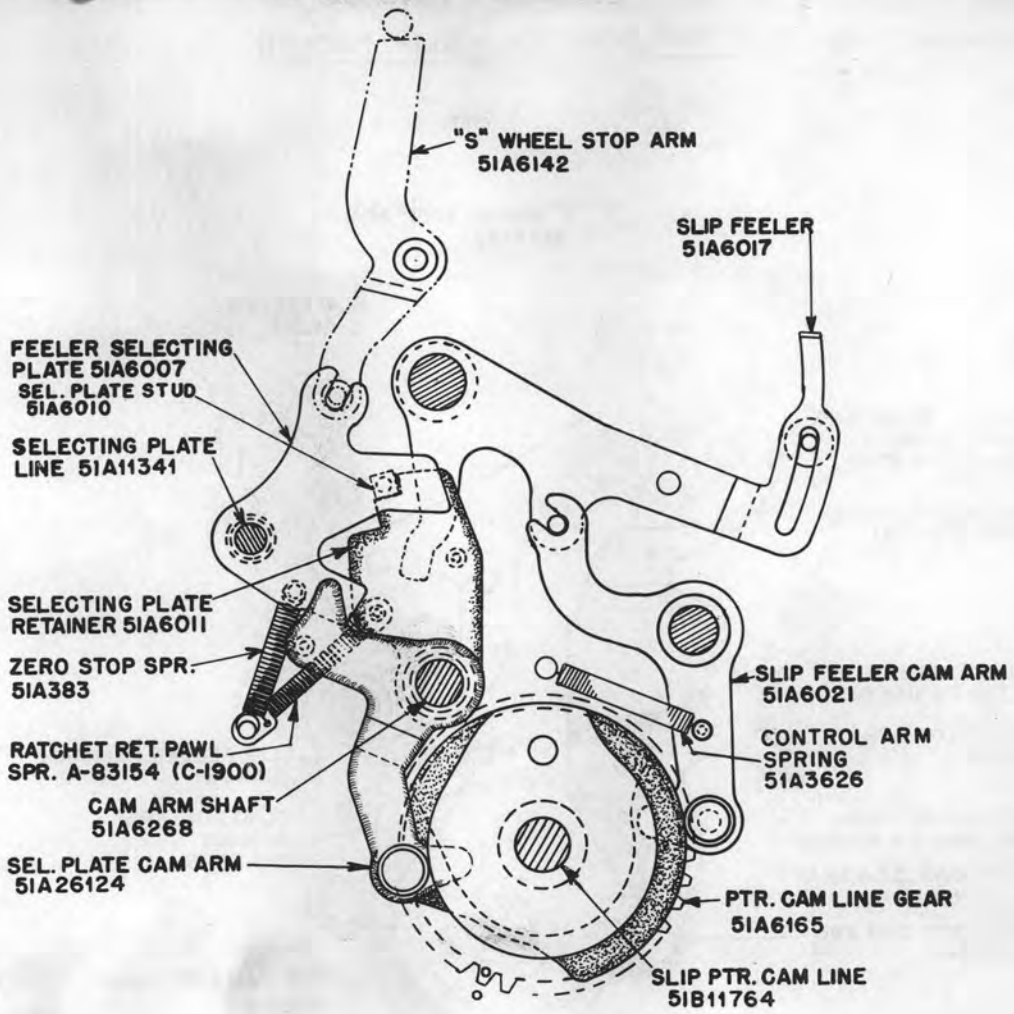
When a key in Row 1 is depressed to complete the transaction, the Key Pin will cause one of the Printer Selecting Pawls to move into the path of the Printer Selecting Arm.

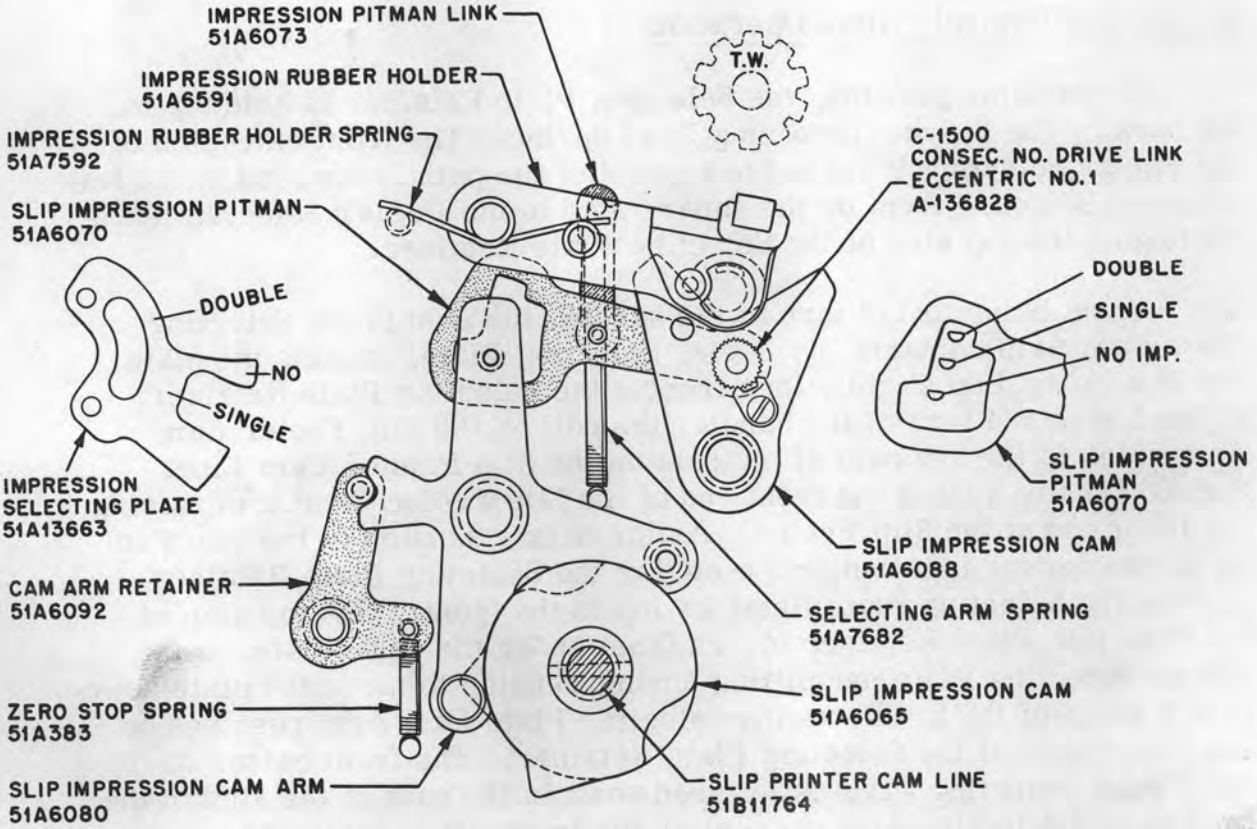
The Consecutive Number Selecting Pitman, Selecting Operating Line and the Selecting Plate Link will receive partial movement. The low surface of the Impression Selecting Plate will be placed in the path of the stud of the Impression Selecting Arm.

At 7/8 turn of the handle, the low part of the Selection Restoring Cam will move under the roll on the Selection Restoring Cam Arm.

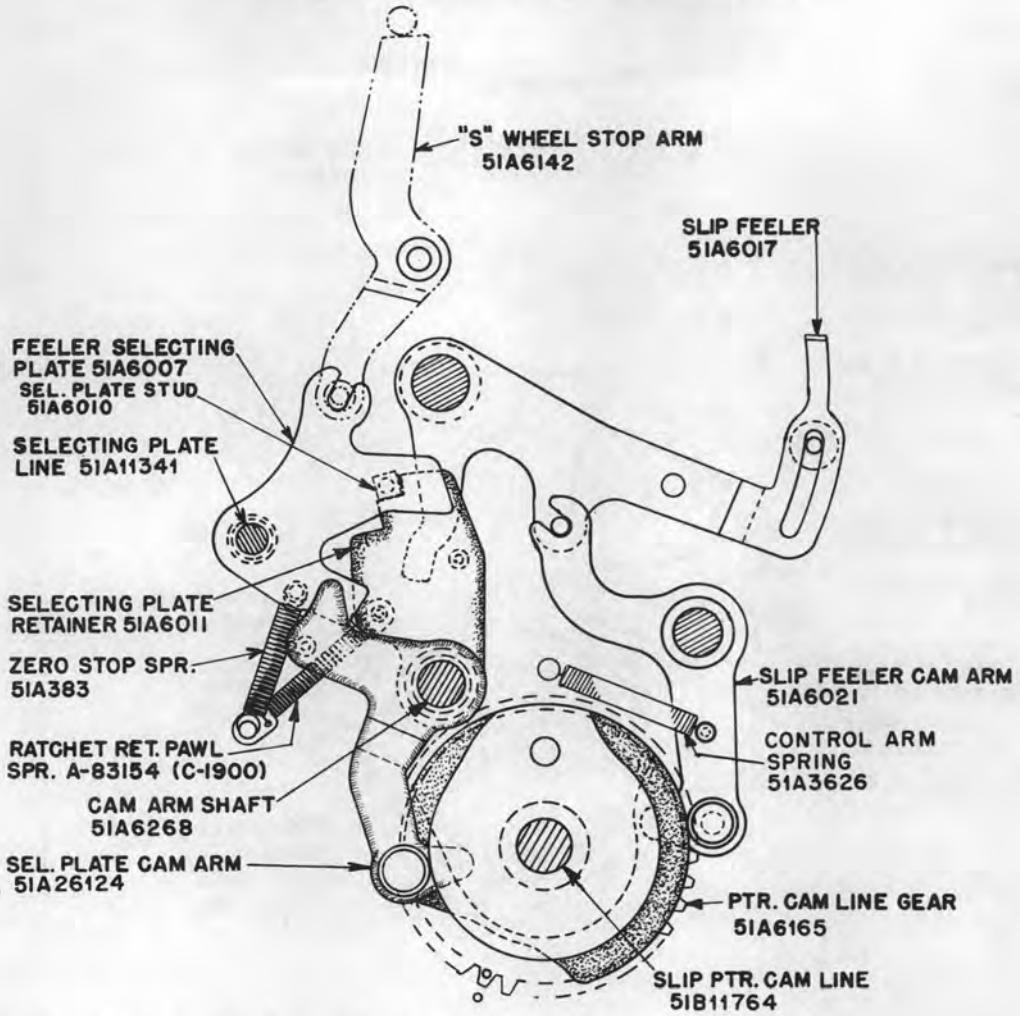
Providing a Slip is placed on the Slip Table, the Feeler Selecting Plate will have a low surface in the path of the stud in the Impression Selecting Arm.

The Selection Restoring Cam Arm frees up the Impression Selecting Link and it moves top to the front. The Impression Pitman Link lowers the back end of the Slip Impression Pitman to able up the Impression Mechanism for two impressions.


"S" WHEEL STOP ARM
51A6142
SLIP FEELER
51A6017
FEELER SELECTING
PLATE 51A6007
SEL. PLATE STUD
51A6010
SELECTING PLATE
LINE 51A11341
SELECTING PLATE
RETAINER 51A6011
ZERO STOP SPR.
51A383
SLIP FEELER CAM ARM
51A6021
CONTROL ARM
SPRING
51A3626
RATCHET RET. PAWL
SPR. A-83154 (C-1900)
CAM ARM SHAFT
51A6268
SEL. PLATE CAM ARM
51A26124
PTR. CAM LINE GEAR
51A6165
SLIP PTR. CAM LINE
51B11764


IMPRESSION PITMAN LINK
51A6073
IMPRESSION RUBBER HOLDER
51A6591
T.W.
IMPRESSION RUBBER HOLDER SPRING
51A7592
C-1500
CONSEC. NO. DRIVE LINK
ECCENTRIC NO.1
A-136828
SLIP IMPRESSION PITMAN
51A6070
DOUBLE
NO
SINGLE
IMPRESSION
SELECTING PLATE
51A13663
DOUBLE
SINGLE
NO IMP.
SLIP IMPRESSION
PITMAN
51A6070
SLIP IMPRESSION CAM
51A6088
CAM ARM RETAINER
51A6092
SELECTING ARM SPRING
51A7682
ZERO STOP SPRING
51A383
SLIP IMPRESSION CAM
51A6065
SLIP IMPRESSION CAM ARM
51A6080
SLIP PRINTER CAM LINE
51B11764

SLIP IMP. CONTROL– SLIP FEELER



Slip Feeler Control - Item Operation

In the home position, the Selecting Plate Retainer is held top to the back by the Ratchet Retaining Pawl Spring. The front extension of the Feeler Selecting Plate is held up out of the path of the stud in the Impression Selecting Arm by the square stud in the Feeler Selecting Plate resting on the top step of the Selecting Plate Retainer.

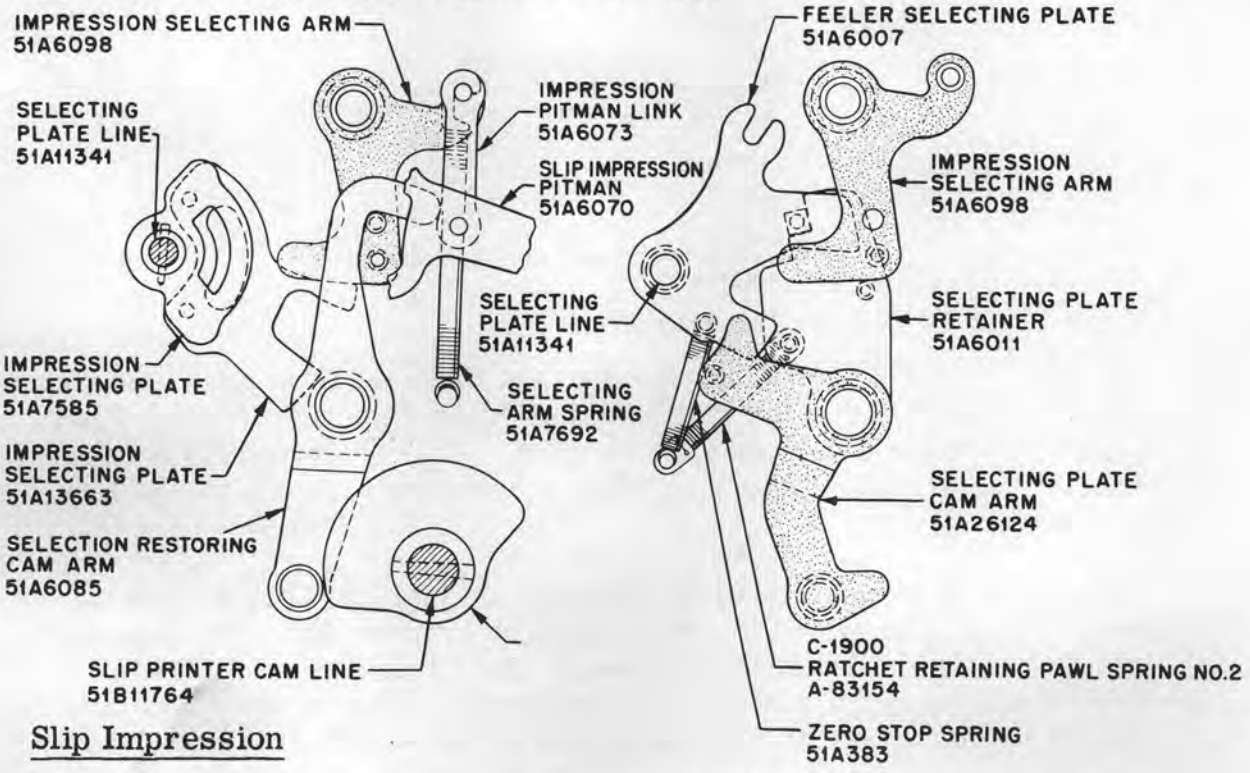
From home to 1/8 turn of the handle, the stud in the Selecting Plate Cam Arm contacts the Feeler Selecting Plate, raising the plate and square stud up slightly thus freeing the Selecting Plate Retainer. From 1/8 to 1/4 turn of the handle, the roll on the Slip Feeler Cam Arm rides to the low part of the cam on the Slip Printer Cam Line. Spring Tension raises the front end of the Slip Feeler Cam Arm raising the front end of the Slip Feeler. As the back extension of the Slip Feeler moves forward, it contacts a stud in the Selecting Plate Retainer, moving the Selecting Plate Retainer top to the front. The top step of the Selecting Plate Retainer moves from under the square stud in the Feeler Selecting Plate permitting Spring Tension to move the plate down at 3/8 turns of the handle as the Selecting Plate Cam Arm restores on the lower step of the Selecting Plate Retainer. The front extension on the Feeler Selecting Plate is lowered down in the path of the stud in the Impression Selecting Arm preventing the Impression Selecting Arm from abling up the Impression Mechanism.

From 1-1/8 to slightly past 1-1/4 turn of the handle, the Slip Feeler is restored by the reverse movement from the Cam and Slip Feeler Cam Arm. The back extension of the Slip Feeler moves away from the stud in the Selecting Plate Retainer.

From home to 1/8 turn of the handle on the next operation, the high part of the Cam on the Slip Printer Cam Line contacts the roll on the Selecting Plate Cam Arm. As the Selecting Plate Cam Arm moves bottom to the back, the stud in the lower end of the Cam Arm contacts the lower extension on the Feeler Selecting Plate and raises the square stud up and out of the second step of the Selecting Plate Retainer. The Selecting Plate Retainer under spring tension will move top to the back placing the first step under the square stud which holds the front extension of the Feeler Selecting Plate above the stud in the Impression Selecting Arm.

Slip Feeler Control - Total Operation

From 1/8 to 1/4 turn of the handle, the Slip Feeler moves up and contacts the Slip. The Selecting Plate Retainer, receiving no movement from the Slip Feeler, holds the front extension of the Feeler Selecting Plate up and out of the path of the Stud in the Impression Selecting Arm permitting the Impression Selecting Arm and the Slip Impression Pitman to able up for two impressions on the slip.



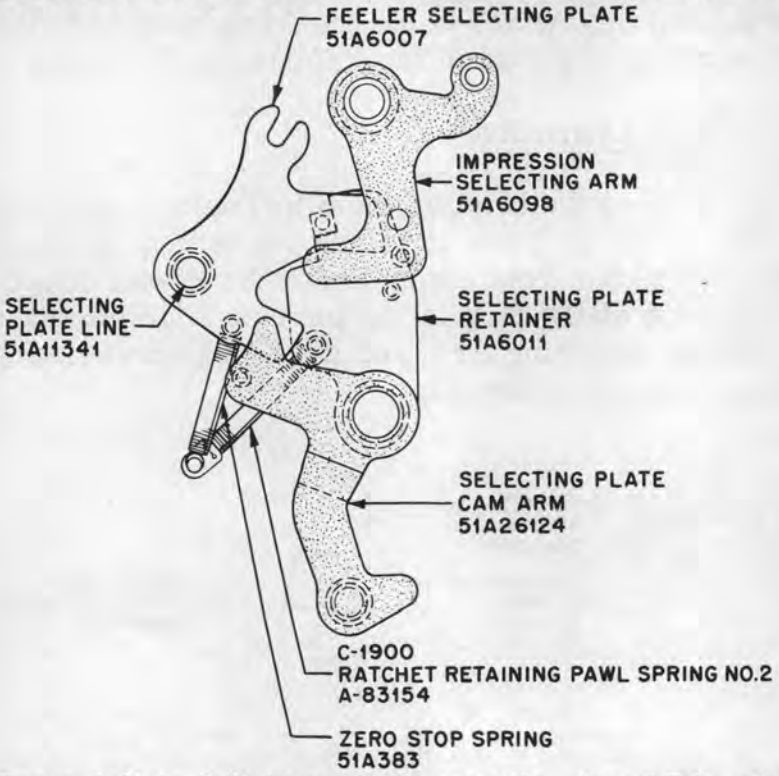
Slip Impression

The Impression Selecting Line is held in its home position by the high part of the Slip Impression Cam against the roll on the Selecting Restoring Cam Arm. This holds the upper part of the Cam Arm against the stud in the Impression Selecting Arm. Attached to the Impression Selecting Arm is the Impression Pitman Link which is connected to the Slip Impression Pitman. With the Slip Impression Pitman held up, a neutral part of the raceway in the pitman is in the path of the stud in the Slip Impression Cam Arm. When the cam arm receives movement, the Slip Impression Pitman receives no movement.

On a multiple item operation, the Impression is disabled by the Impression Selecting Plate 51A7585. This Plate is controlled from the Transaction Keys. The impression is also disabled by the Feeler Selecting Plate which is controlled from the Slip Feeler. Both Plates are in the path of the stud in the Impression Selecting Arm, holding the Arm and Slip Impression Pitman up in the "home" or neutral position.

Slip Impression - Total Operation

From home to 1/8 turn of the handle, the Selecting Plate Cam Arm restores the front end of the Feeler Selecting Plate above the stud in the Impression Selecting Arm freeing up the Impression Selecting Arm.

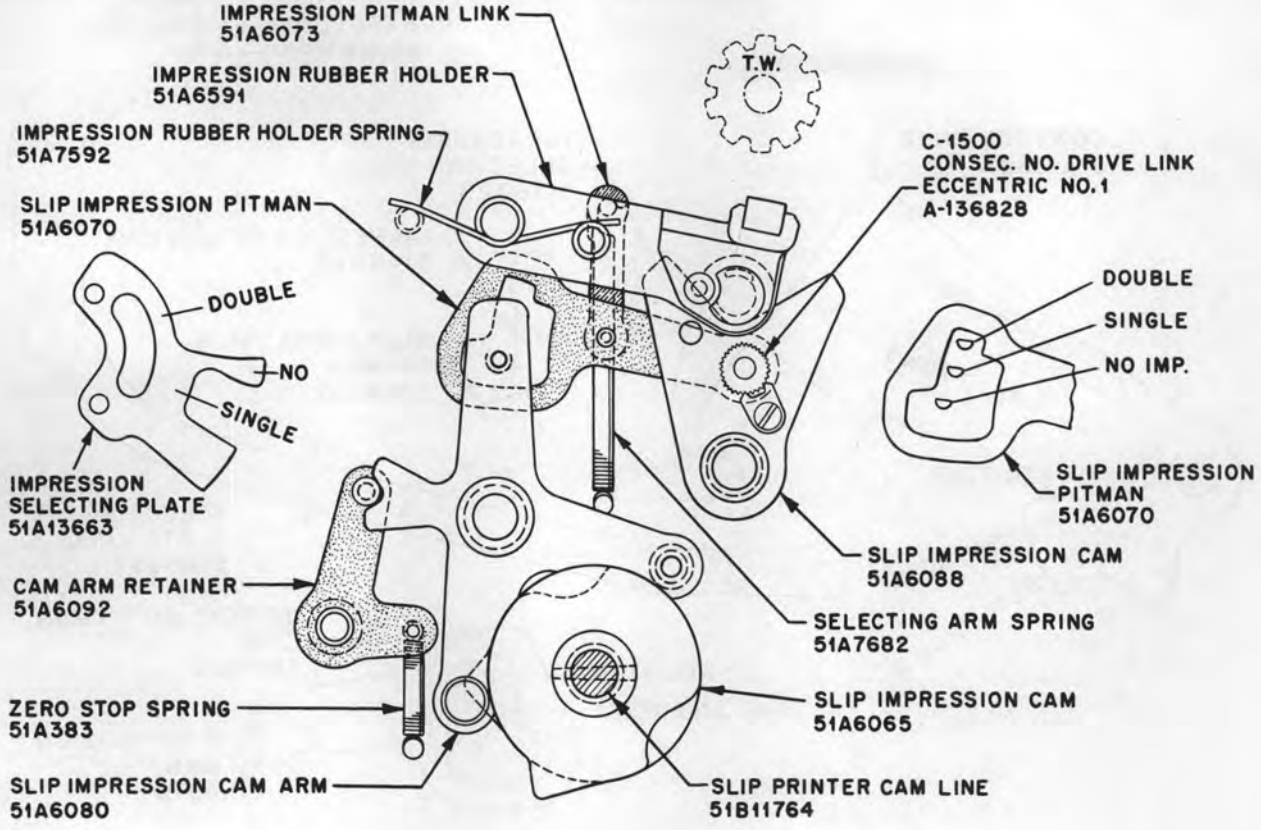


From 1/4 to 3/8 turn of the handle, the S-Wheel Cam Arm unlocks the Selecting Plate Line by moving the stud in the Selecting Ratchet Pawl out of the teeth of the Selecting Line Ratchet. As a Selecting Plate Line restores, the Impression Selecting Plate moves down freeing up the Impression Selecting Arm.

From 7/8 to 1-1/8 turn of the handle, the high part of the cam on the Printer Cam Line moves away from the roll on the Selection Restoring Cam Arm. This allows the Impression Selecting Arm and Slip Impression Pitman to move down by spring tension. This ables up the Slip Impression Pitman over the Cam Arm Stud in the Slip Impression Cam Arm.

Just after 1-1/8 turn of the handle, the high part of the Slip Impression Cam contacts the upper roll on the Slip Impression Cam Arm moving the arm top to the back. The Impression Cam Arm Stud contacts the Slip Impression Pitman and moves the pitman and the Slip Impression Cam to the back. The Slip Impression Cam contacts the Impression Cam Roll raising the Impression Rubber Holder up, thus making the impression on the slip. From 1-1/4 to 1-3/8 turns of the handle, the Slip Impression Cam Arm restores allowing the Impression Rubber Holder Spring to restore the Impression Rubber Holder.

IMPRESSION

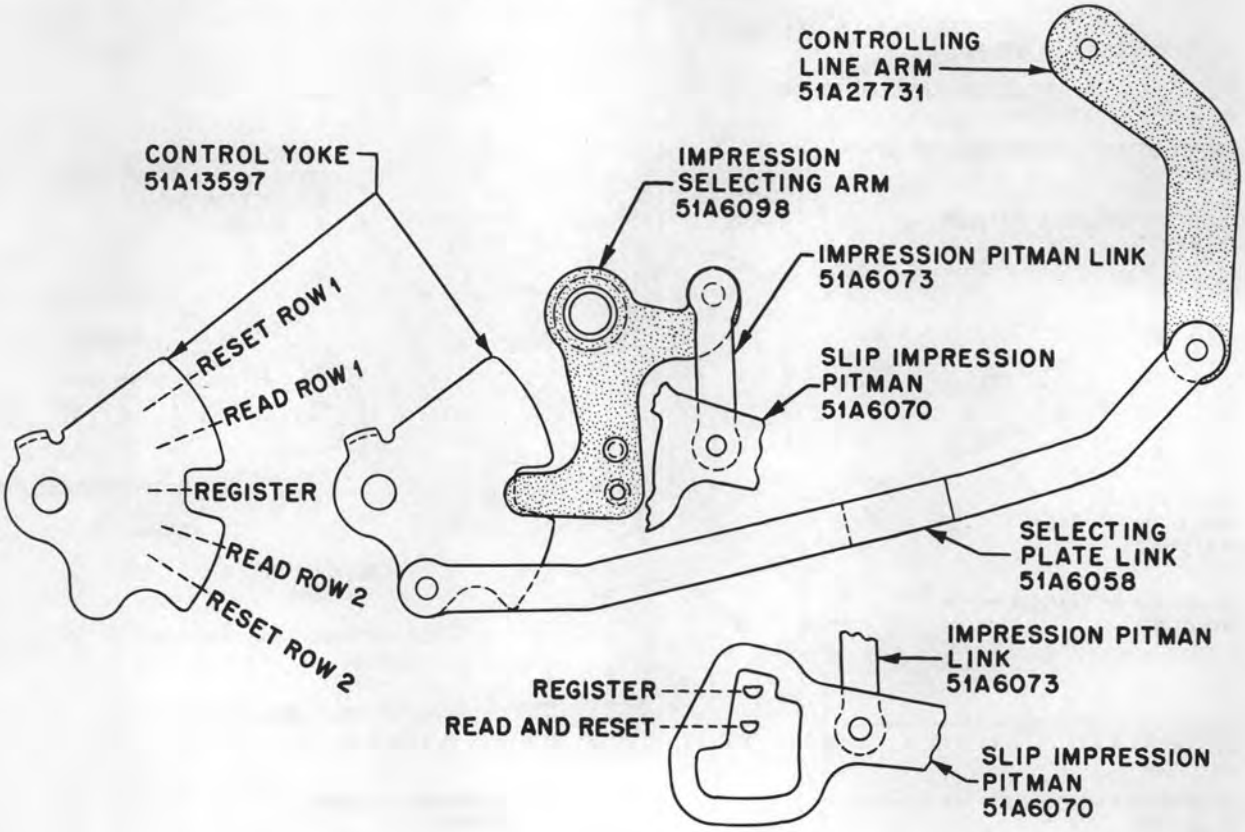


From 1-5/8 to 1-3/4 turn of the handle, the high part of the Slip Impression Cam contacts the lower roll on the Slip Impression Cam Arm moving arm top to the front. The Impression Cam Arm Stud contacts the Slip Impression Pitman and moves it forward. The Slip Impression Cam contacts the Impression Cam Roll raising the Impression Rubber Holder up and making the impression.

At 1-3/4 turn of the handle, the Slip Impression Cam Arm restores to its home position.

From 1-3/4 to 1-7/8 turns of the handle, the Selection Restoring Cam Arm restores top to the front against the stud in the Impression Selecting Arm restoring the arm and Slip Impression Pitman to their home position.

UNIT LOCK LEVER CONTROL SLIP IMPRESSION



Unit Lock Lever Control - "Register" Position

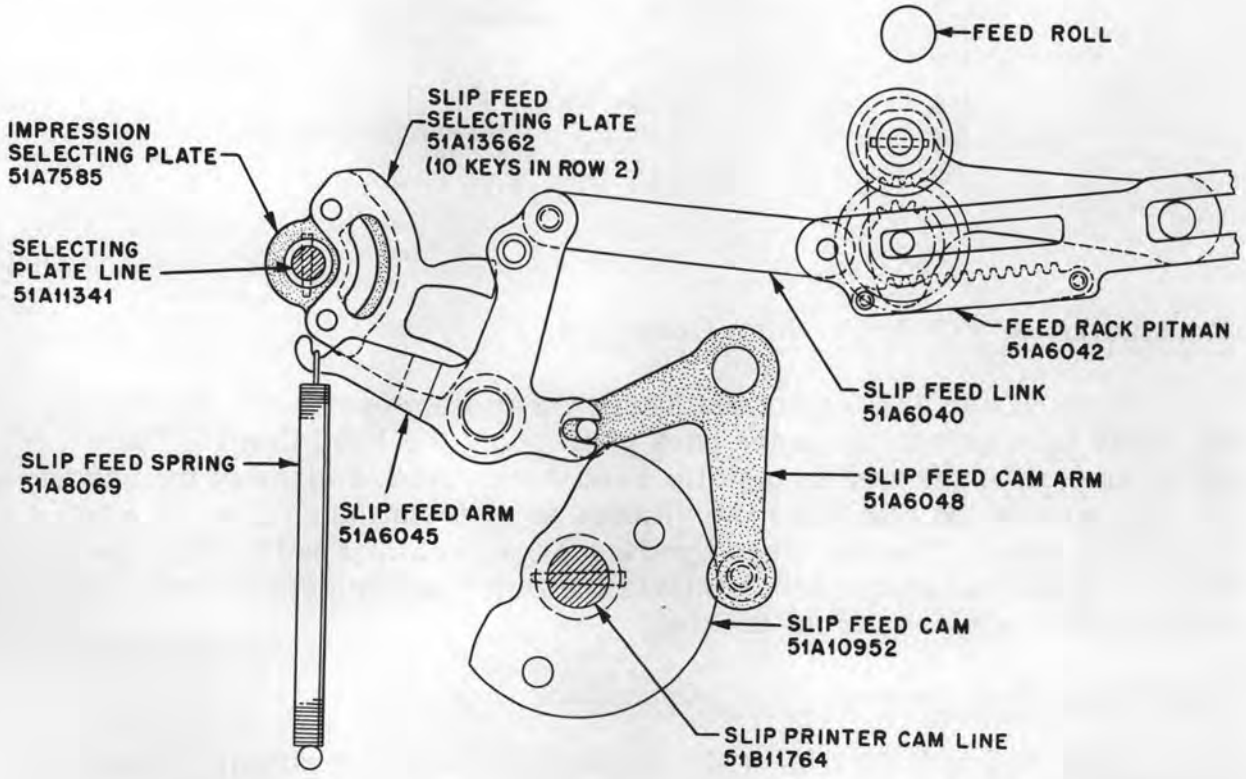
The Unit Lock Lever controls the Control Arm Selecting Plate through the movements of the Control Line, the Control Line Arm, the Control Line Arm 51A6250 and the Selecting Plate Link.

The Control Arm Selecting Plate consists of 2 yoke assembly of two plates. The plate on the right has a deep notch that the stud in the Impression Selecting Arm enters on a slip total operation. This allows the Slip Impression Pitman to move down and able it for two impressions on the slip. The Plate on the left has two adjusting plates which control the feed of the slip and will be explained under Slip Feed Mechanism.

Unit Lock Lever Control - "Read" or "Reset" Position

On a "Read" or "Reset" operation, the Unit Lock Lever is moved out of the "Register" position giving movement to the Control Line, the two Control Line Arms and the Selecting Plate Link. This positions a high part of the right portion of the yoke in the path of the stud in the Impression Selecting Arm. With the slip in the register, the Impression Selecting Arm moves back until the Impression Selecting Arm Stud contacts the right portion of the yoke. This is enough movement to permit the Slip Impression Pitman to move down far enough to able for a single print on the slip.

On a "Read" or "Reset" operation with a form in the register, the Feeler Selecting Plate is held up in a disabled position, abling up the Impression Selecting Arm. The Consecutive Number Selecting Pitman stays to the front by the Printer Selecting being stopped by the Controlling Drive Arm which keeps the Impression Selecting Plate below the stud in the Impression Selecting Arm abling up the Impression Selecting Arm.

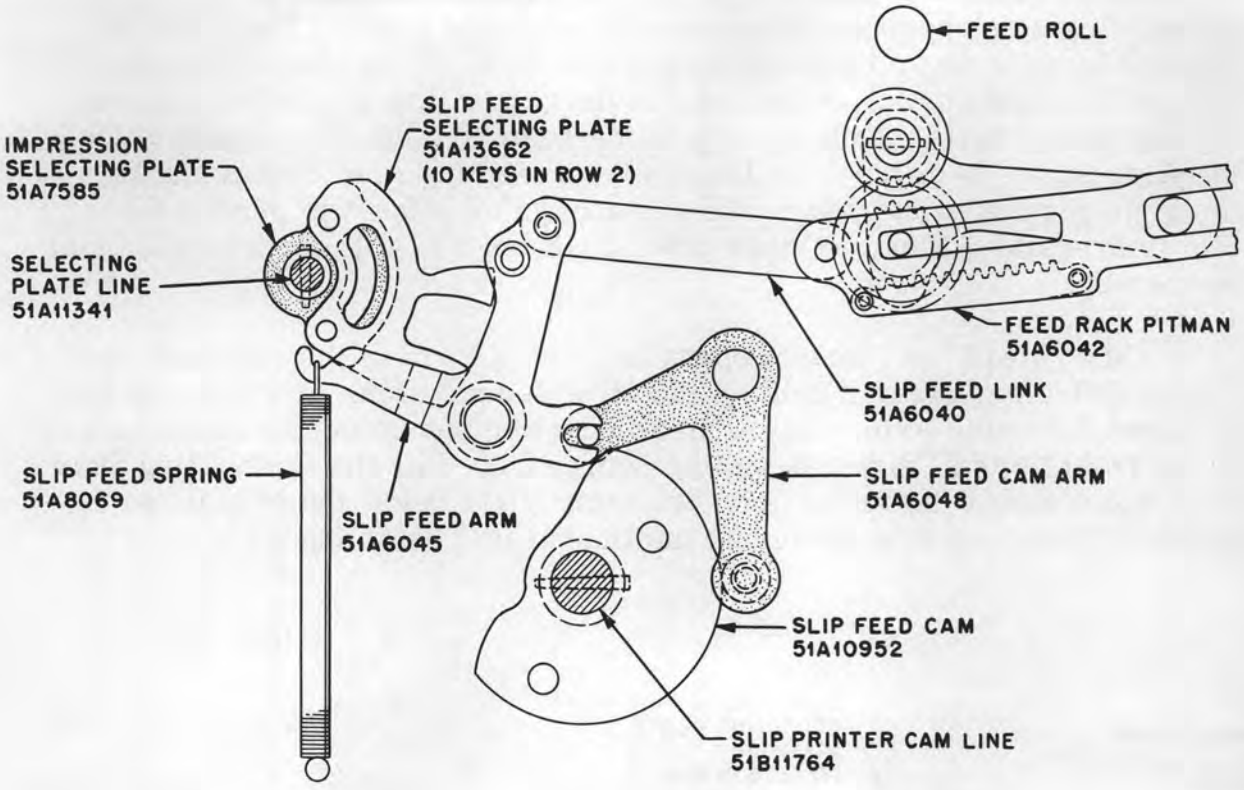

FEED ROLL
SLIP FEED SELECTING PLATE 51A13662 (10 KEYS IN ROW 2)
IMPRESSION SELECTING PLATE 51A7585
SELECTING PLATE LINE 51A11341
FEED RACK PITMAN 51A6042
SLIP FEED LINK 51A6040
SLIP FEED SPRING 51A8069
SLIP FEED ARM 51A6045
SLIP FEED CAM ARM 51A6048
SLIP FEED CAM 51A10952
SLIP PRINTER CAM LINE 51B11764

SLIP FEED

The feed of the slip is controlled by the Slip Feed Selecting Plate 51A13662 which is pinned to the Selecting Plate Line. This line is controlled from the Transaction Key.

The Unit Lock Lever also controls the feed of the slip through the Control Yoke 51A13597.

SLIP FEED-TRANSACTION KEY CONTROL
(C-52)



Transaction Key Control - Item Operation

From 1/8 to 3/8 turn of the handle on an item operation, the Selecting Plate Line moves top to the back positioning the Feed Control Plate up in the path of the stud in the Slip Feed Arm. At 3/4 turns of the handle, the high part of the Slip Feed Cam moves away from the roll on the Slip Feed Cam Arm. The Slip Feed Spring moves the Slip Feed Arm to the back until the stud in the arm contacts the Slip Feed Selecting Plate, preventing the Feed Rolls from cocking.

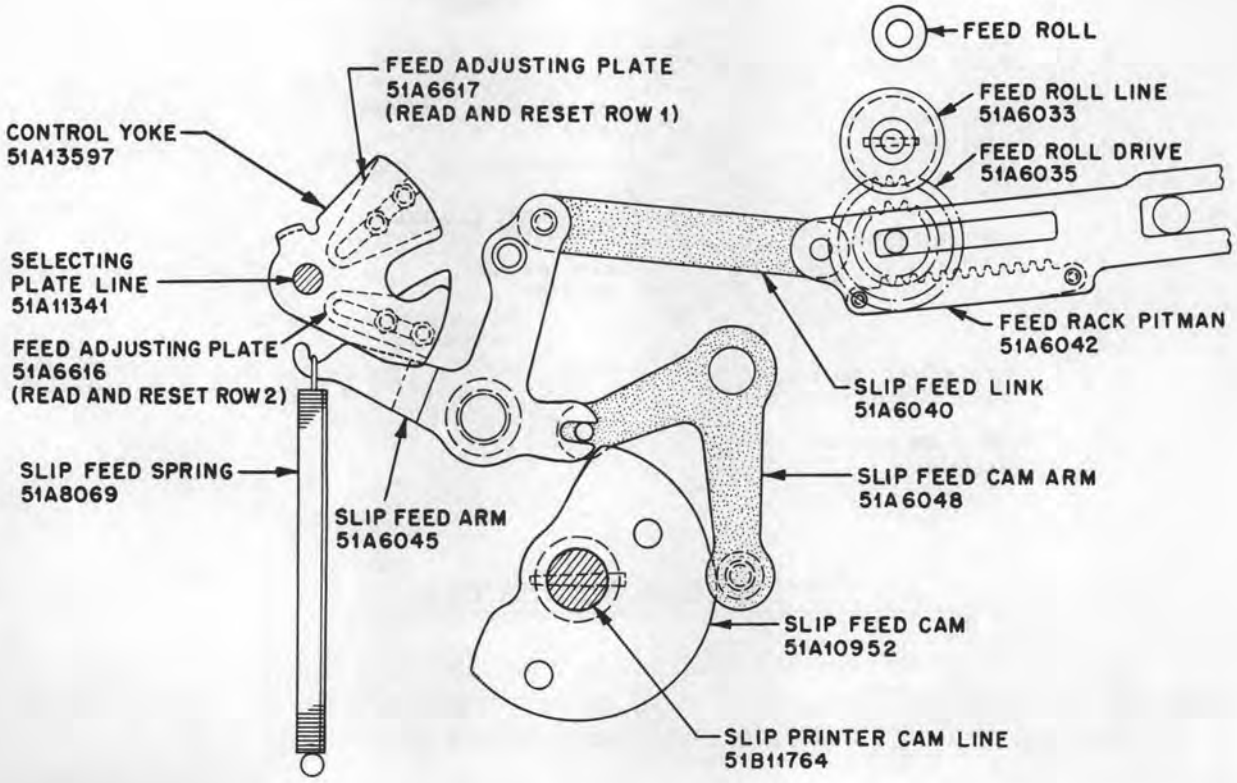
Transaction Key Control - Total Operation

From 1/8 to 3/8 turns of the handle on a Total operation, the Selecting Plate Line moves top to the back. The Slip Feed Selecting Plate moves up but not far enough to get into the path of the Slip Feed Stud in the Slip Feed Arm.

At 3/4 turns of the handle, as the high part of the Slip Feed Cam moves away from the roll on the Slip Feed Cam Arm, the Slip Feed Spring pulls the Slip Feed Arm, Slip Feed Link and Feed Rack Pitman to the back, cocking the Slip Feed Rolls.

From 1 to 1-1/8 turns of the handle, the Feed Rolls close. At 1-1/4 turns of the handle the first impression is made on the slip. At approximately 1-3/8 turns of the handle, the roll on the Slip Feed Cam Arm rides from the low to the high part of the Slip Feed Cam. The Slip Feed Rack Pitman receives reversed movement to the front causing the Feed Rolls to turn top to the front spacing the Slip for the second print. The second impression on the slip is made from 1-5/8 to 1-3/4 turns of the handle. The Feed Rolls open just after 1-3/4 turns of the handle.

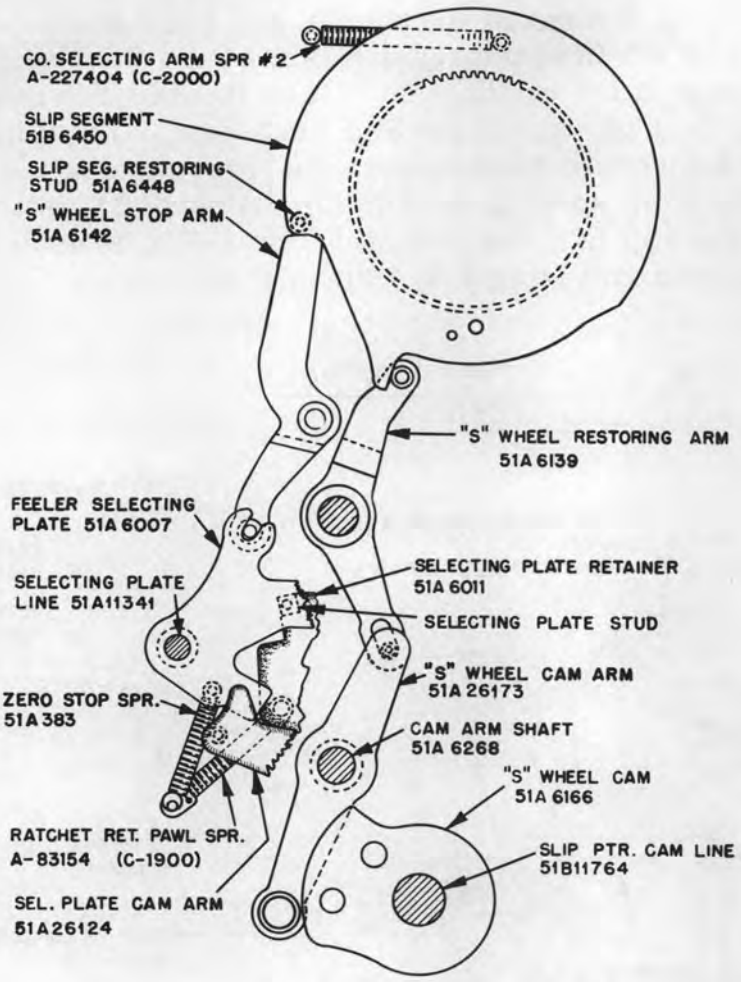
UNIT LOCK LEVER CONTROL
SLIP FEED



Unit Lock Lever Control - Slip Feed

The Unit Lock Lever controls the movement of the Control Yoke 51A13579. The Plate on the right of the yoke sets up a condition for a single print with the Unit Lock Lever out of the "Register" position. The Plate on the left of the Yoke sets up a condition for single space of the form on a "Read" or "Reset" of Row 2.

A double space between prints on the forms may be obtained by adjusting the top Feed Adjusting Plate. The bottom Feed Adjusting Plate can be adjusted for single or double space between prints on a "Read" or a "Reset" of Row 1. Normally, the two Feed Adjusting Plates are set up to single space the form on a "Read" or "Reset" of Row 2 and double space the form on a "Read" or "Reset" of Row 1. The two Feed Adjusting Plates stop the backward travel or cocking of the Slip Feed Arm in the Feed Rack Pitman.



"S" TYPE WHEEL MECHANISM

The "S" Type Wheel Mechanism is used as a notification of a slip inserted on the Slip Table. A "S" will be printed on the detail to the left of the Amount Print to indicate a slip was placed on the Slip Table on that operation.

The "S" will print any time there is a slip over the Slip Feeler regardless of the condition of the "No Receipt" key. On every operation, the "S" Type Wheel is on the print line at the beginning of the operation.

If a slip is inserted, the "S" Type Wheel will remain on the Detail Type Line. Otherwise, if there is no slip over the Slip Feeler, the "S" Type Wheel will be removed from the Detail Type Line during the operation before the detail impression is made.

Slip Operation

With a slip on the Slip Table over the Slip Feeler, from home to 1/8 turn of the handle, the Selecting Plate Cam Arm is moved top to the front by the Selecting Plate Cam. The stud in the upper end of the arm contacts the Feeler Selecting Plate and moves the square stud in it above the first step of the Selecting Plate Retainer with lead. The Spring Tension on the Retainer will move it top to the back placing the first step under the square stud.

Also, the upper portion of the Feeler Selecting Plate yokes the stud in the lower end of the "S" Wheel Stop Arm and moves it top to the front to place the upper end of the arm under the stud in the Slip Segment.

At this time, the Slip Segment is held top to the front by the "S" Wheel Restoring Arm and through the Transmission to the Detail Printer the "S" Wheel is held on the Print Line.

From 1/8 to 1/4 turn of the handle, the low portion of the Slip Feeler Cam moves under the roll on the Slip Feeler Cam Arm and spring tension on the arm will move it top to the front, moving the Slip up in the front.

Since the Slip has been placed on the Slip Table over the Slip Feeler, the Slip Feeler will receive only a slight movement until it is stopped by the Slip.

From 1/4 to 3/8 turns of the handle, the Selecting Plate Cam Arm moves top to the back and the spring on the Feeler Selecting Plate will move it top to the front until the square stud in the Plate contacts the first step of the Selecting Plate Retainer. This is not enough movement to move the upper portion of the "S" Wheel Stop Arm out from under the stud in the Slip Segment.

Slightly before 1/2 turn of the handle, the low surface of the "S" Wheel Cam will be positioned under the roll in the "S" Wheel Cam Arm and the "S" Wheel Restoring Arm is free to move top to the front. A Slip Segment will move slightly top to the back until the Stud in it contacts the "S" Wheel Stop Arm.

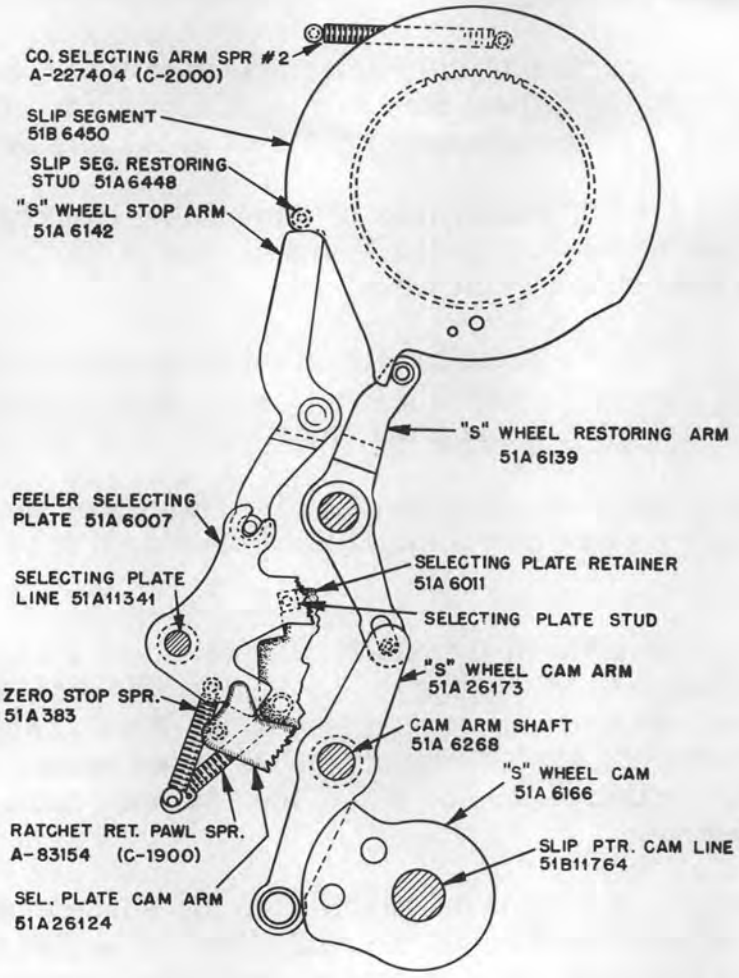
Since the upper portion of the "S" Wheel Stop Arm is holding the Slip Segment to the front, the "S" Type Wheel will remain on the Detail Print Line.

About 1-1/4 the Slip Feeler Cam Arm will restore the Slip Feeler to its home position.

From 1-3/4 to 2 turns of the handle, the high surface of the "S" Wheel Cam will move the "S" Wheel Cam Arm top to the front. The "S" Wheel Restoring Arm will move top to the back and the stud in the upper end will contact the projection on the Slip Segment and move it slightly top to the front to open a small gap between the stud in the Segment and the upper part of the "S" Wheel Stop Arm.

No Slip Operation

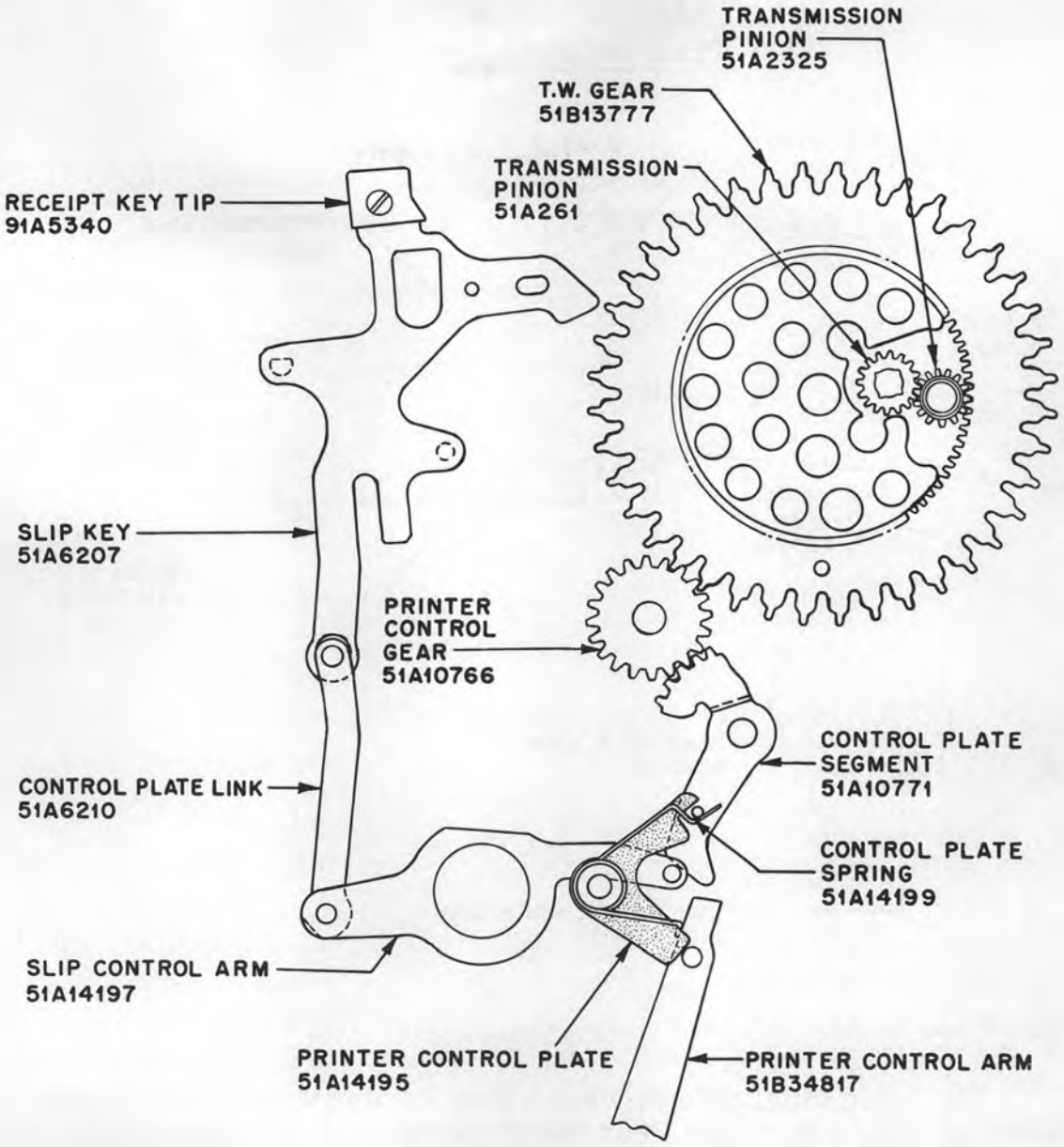
From "Home" to 1/8 turn of the handle, the square stud in the Feeler Selecting Plate is moved above the first step in the Selecting Plate Retainer with lead. The spring on the Retainer will cause the first step to be moved under the stud.



At the same time, the "S" Wheel Stop Arm is moved top to the front under the stud in the Slip Segment. From 1/8 to 1/4 turn of the handle, the Slip Feeler is allowed to move up and sense for slip. Since there is no slip on the Slip Table, the Slip Feeler will receive its full movement. As the Feeler moves up, the lower extension moves against the stud in the Selecting Plate Retainer and will cause the Retainer to move top to the front. The first step of the Retainer will move out from under the square stud in the Feeler Selecting Plate. The second step will be placed in the path of the stud.

From 1/4 to 3/8 turns of the handle the Feeler Selecting Plate is allowed to move down by the Selecting Plate Cam Arm. The plate will move down until the square stud in it contacts the second step of the Selecting Plate Retainer. The "S" Wheel Stop Arm will be moved top to the back out from under the stud in the Slip Segment. Just before 1/2 turn of the handle, a low surface of the "S" Wheel Cam will move under the roll on the rear end of the "S" Wheel Cam Arm. This frees up the "S" Wheel Restoring Arm. Spring tension on the Slip Segment causes it to move top to the back and through the transmission the "S" Type Wheel is removed from the Detail Print Line.

From 1-1/8 to 1-1/4 the Slip Feeler Cam Arm restores the Slip Feeler to its home position. From 1-3/4 to 2 turns of the handle, the high surface of the "S" Wheel Cam will cause the "S" Wheel Restoring Arm to move top to the back and move the Slip Segment top to the front. This replaces the "S" Type Wheel on the Detail Print Line.



Receipt Disabling-Slip Operation

Whenever a slip is placed on the Slip Table before the start of itemization, the Receipt will be automatically disabled.

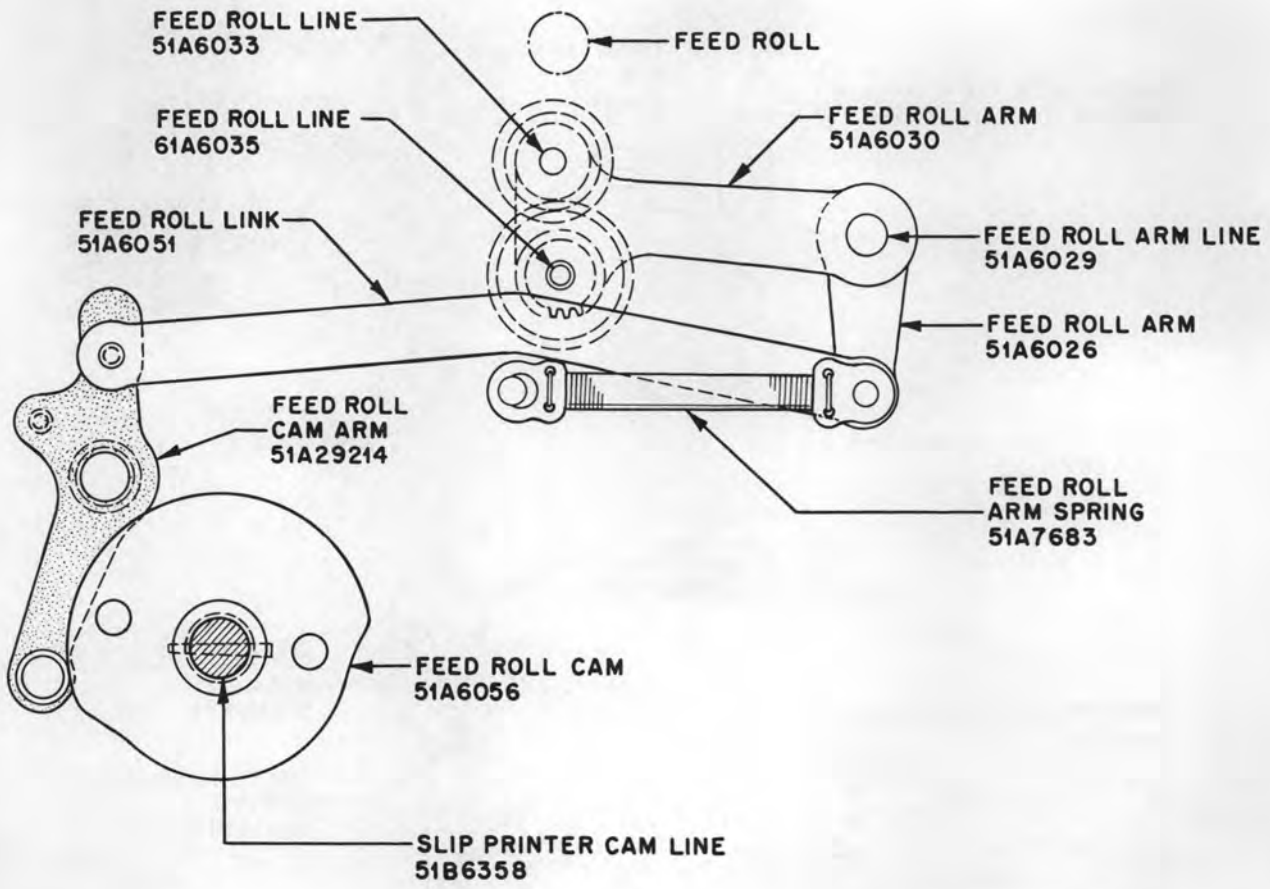
When a slip is inserted, the Slip Feeler is held down and through the Feeler Selecting Plate, the "S" Wheel Stop Arm holds the Slip Segment top to the front to position the "S" Type Wheel on the Detail Print Line.

The same Type Wheel Gear that is meshed with the "S" Type Wheel is also meshed with a Idler Gear which is in turn meshed with the Control Plate Segment.

With the "S" Type Wheel on the Detail Print Line, the Control Plate Segment is held top to the back.

The Printer Control Plate 51A10768 is held top to the front so that the rear back portion is in the path of the stud in the Printer Control Arm thus disabling the feed and print of the receipt.

OPEN FEED ROLLS
SLIP FEED MECHANISM



Open Feed Rolls

The basic difference between a Slip Printer with "Closed Feed Rolls" and one with "Open Feed Rolls" is that after every operation regardless of the type, the Slip Feed rolls are open.

On this style printer, neither the Unit Lock Lever nor the Control Keys have any control on the opening and closing of the Feed Rolls.

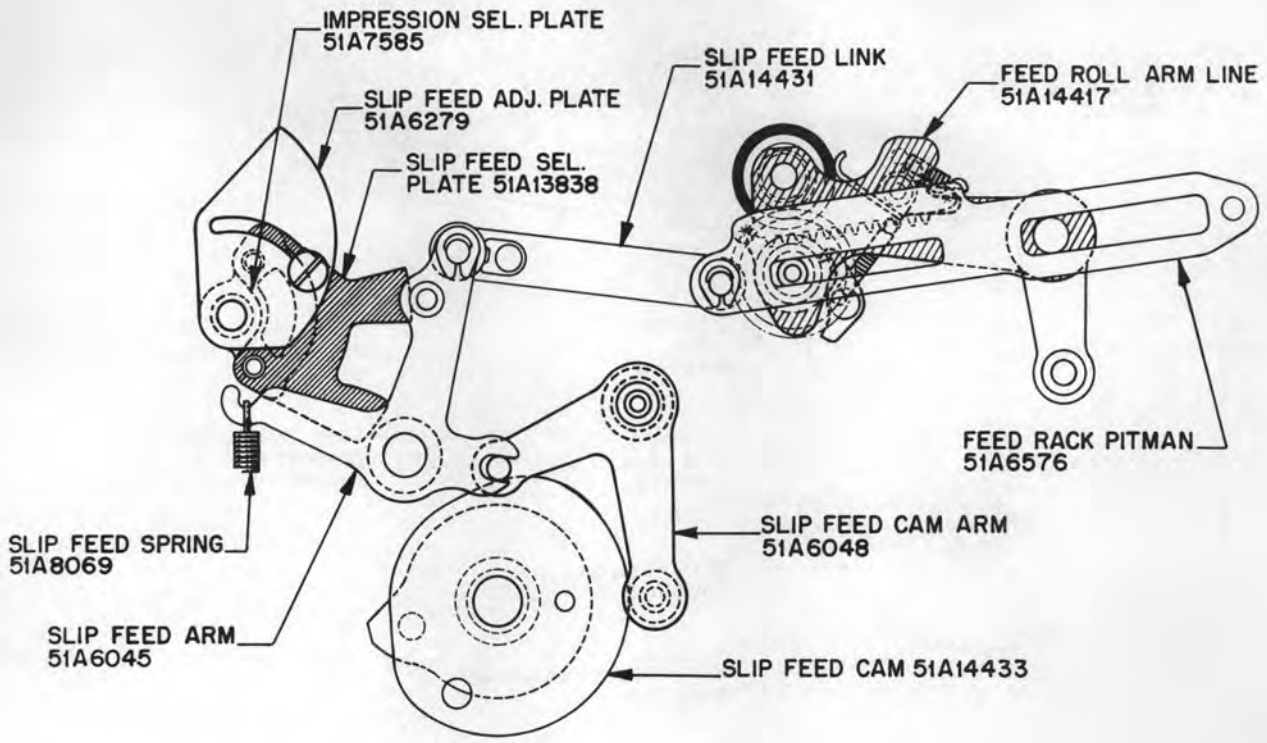
At approximately 7/8 turns of the handle, the low surface of the Feed Roll Cam comes under the roll on the bottom end of the Feed Roll Cam Arm. The Feed Roll Arm Spring moves the Feed Roll Link to the back. The Feed Roll Line is isolated top to the front closing the Slip Feed Rolls.

Slightly past 1-3/4 turns of the handle, the high surface of the Feed Roll Cam moves the Feed Roll Cam Arm top to the front opening the Feed Rolls.

Since there is no selection plates to control the opening and closing of the Feed Rolls, they will function the same on every operation regardless of the type.

SLIP FEED

(FRONT TO BACK AND CONSECUTIVE FEED)


IMPRESSION SEL. PLATE 51A7585
SLIP FEED ADJ. PLATE 51A6279
SLIP FEED SEL. PLATE 51A13838
SLIP FEED LINK 51A14431
FEED ROLL ARM LINE 51A14417
FEED RACK PITMAN 51A6576
SLIP FEED CAM ARM 51A6048
SLIP FEED SPRING 51A8069
SLIP FEED ARM 51A6045
SLIP FEED CAM 51A14433

Slip Feed

The feed of the Slip can be made to feed in a "front to back" or "back to front" direction.

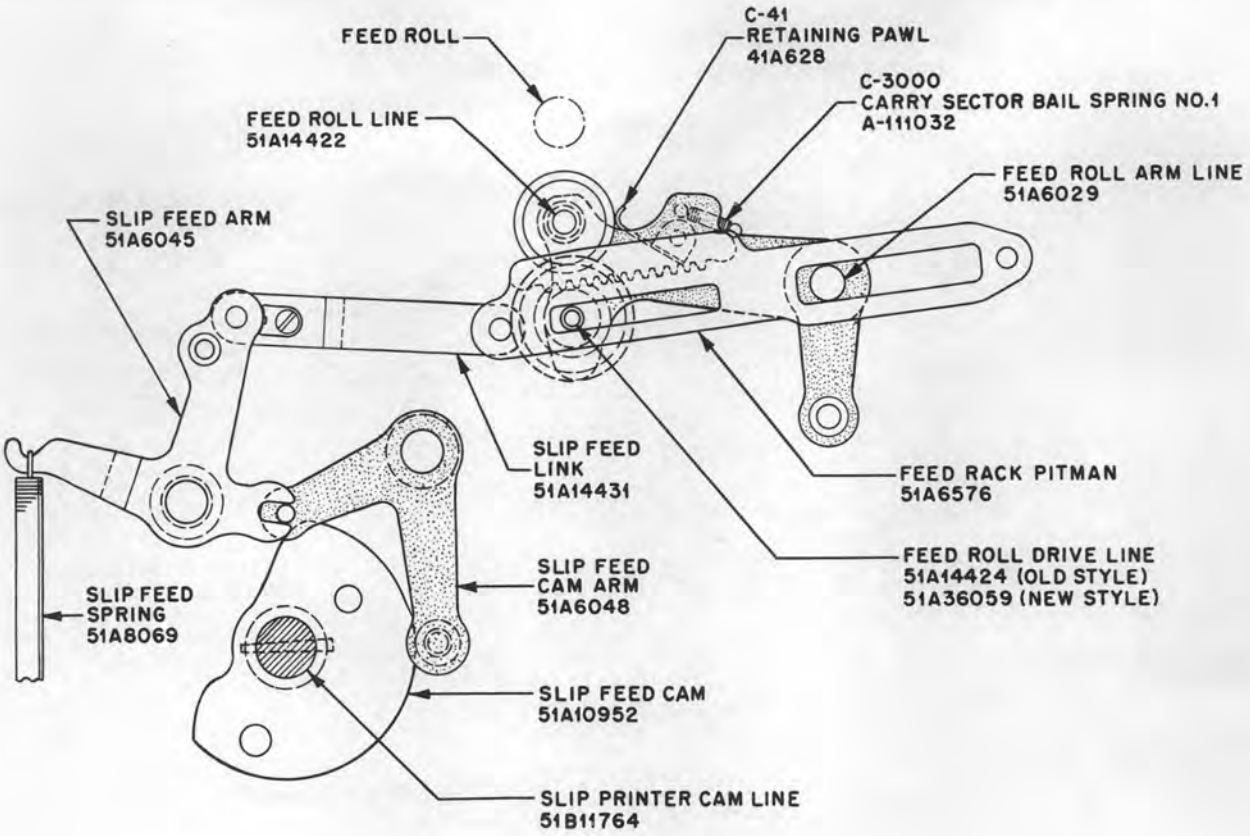
The only difference between the two directions of feed is the style Feed Rack Pitman used and the Feed Roll Drive Line. For a "front to back" feed on an "Open Feed Roll" style printer, Feed Rack Pitman 51A 6576 is used. With this style pitman, the "cock" of the Feed Rolls is made top to the front. This is accomplished by the Feed Rack Pitman being meshed with the top of the Feed Roll Gear which is pinned to the Feed Roll Drive Line.

For a "back to front" feed on an Open Feed Roll style printer, Feed Rack Pitman 51A6042 is used. With this style pitman, the Feed Rolls are cocked top to the back. This pitman meshes with the bottom of the Feed Roll Gear.

Consecutive Feed - New Style

On Slip Printers with Consecutive Feed, the Slip Feed Selecting Plate is cut out in both the item and total position. This means that on both types of operations, the Slip Feed Mechanism is abled.

On an Item operation, the Slip Feed Selecting Plate is positioned so that a low surface is in the path of the stud in the Slip Feed Arm.



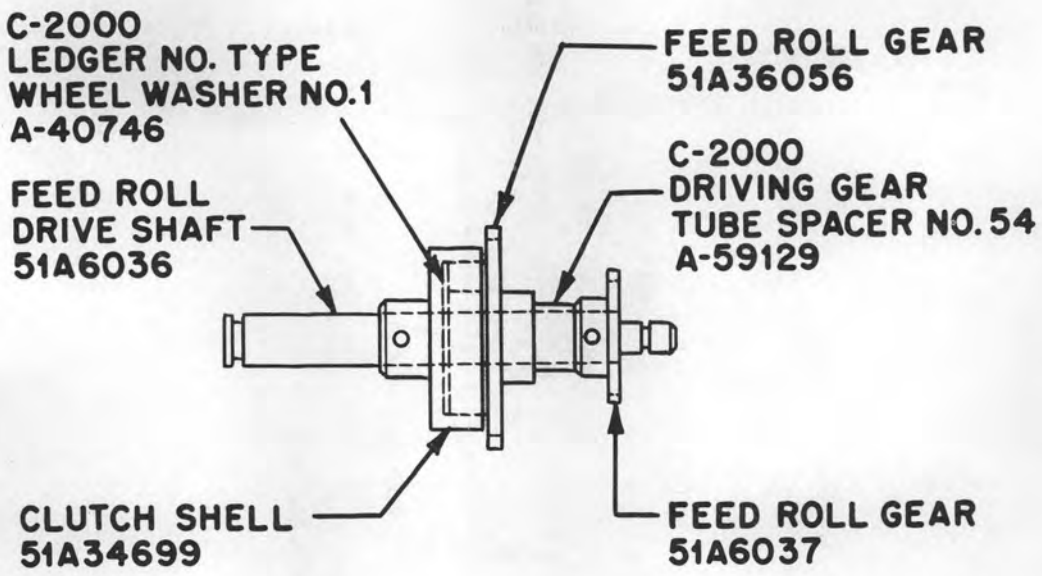
At approximately 3/4 turns of the handle, the low portion of the Slip Feed Cam moves under the roll and stud in the Slip Feed Cam Arm. The Slip Feed Spring causes the Slip Feed Arm to move top to the back until it is stopped by the stud in the arm contacting the Slip Feed Adjusting Plate 51A6279 which is assembled on the outside of the Lower Printer Plate.

The Slip Feed Link is moved to the back and being connected to the Feed Rack Pitman, will move it to the back.

The teeth of the Feed Rack Pitman are meshed with the Feed Roll Gear 51A6037 which is pinned to the Feed Roll Drive Line. As the pitman moves to the back, the Feed Roll Gear and Feed Roll Drive Line are turned top to the back.

The Clutch Shell 51A34699 which is also pinned to the Feed Roll Drive Line is turned top to the back over the four Clutch Pawls which are assembled in the Feed Roll Gear 51A36056 and held by spring tension to the back. This gear is swung on a Feed Roll Drive Line and meshed with the Feed Roll Pinion pinned to the Feed Roll Line.

At approximately 1-3/8 turns of the handle, right after the impression has been made, the high portion of the Slip Feed Cam will move under the roll and stud in the Slip Feed Cam Arm. The Slip Feed Arm will cause it to move top to the front and the Slip Feed Link and the Feed Rack Pitman will move to the front.



The Feed Rack Pitman, being meshed with the Feed Roll Gear, will turn it and the Feed Roll Drive Line top to the front. The Clutch Shell 51A34699 will move top to the front and since the four Clutch Pawls are not flexible in this direction, they will bond the Feed Roll Gear 51A36056 to the Clutch Shell.

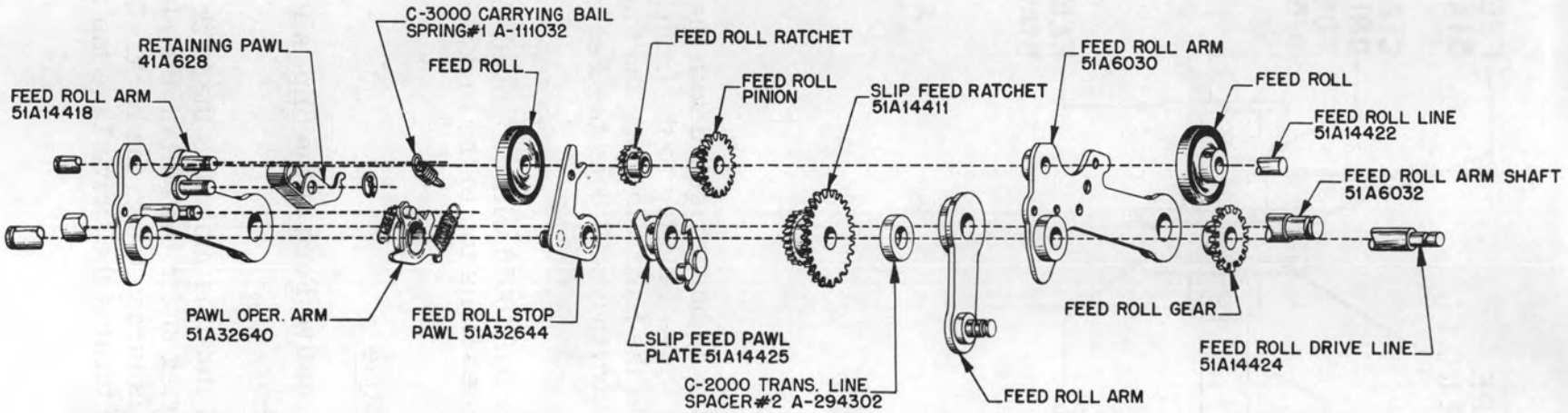
The Feed Roll Gear 51A36056 will be moved top to the front turning the Feed Roll Line and Feed Rolls top to the back feeding the slip to the back.

Consecutive Feed - Old Style

The old style Consecutive Feed of the Slip is identical except for the Feed Roll Drive Line.

As the Feed Rack Pitman is moved to the back by the low portion of the Slip Feed Cam moving under the roll on the Slip Feed Cam Arm, the Feed Roll Gear 51A6037 is turned top to the back. This gear is pinned to the Feed Roll Drive Line turning the Drive Line top to the back.

FEED ROLL ASSEM.



The Slip Feed Pawl Plate 51A14425 is also pinned to the Drive Line and has the Slip Feed Pawl assembled to it.

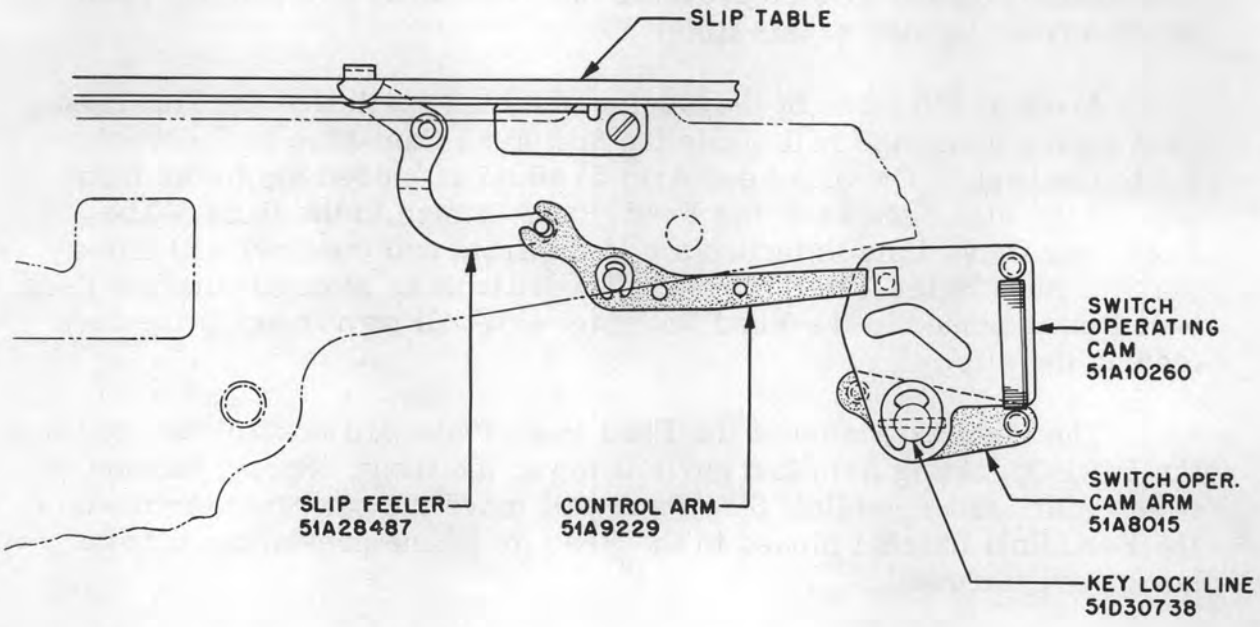
As the plate is turned top to the back, the pawl ratchets over the Slip Feed Ratchet, which is swung on the line, cocking for a slip feed. The Retaining Pawl 41A628 prevents the Feed Rolls and the Slip Feed Ratchet from turning at this time.

About 1-3/8 turns of the handle, the high portion of the Slip Feed Cam moves under the roll under the Slip Feed Cam Arm and moves it top to the back. The Slip Feed Arm 51A6045 is moved top to the front moving the Slip Feed Link and Feed Rack Pitman to the front. The Feed Roll Drive Line is turned top to the front and the pawl will move the Slip Feed Ratchet to the front. This ratchet is meshed with the Feed Roll Pinion pinned to the Feed Roll Line and will turn it top to the back feeding the slip.

The right extension of the Feed Pawl Plate will contact the stud in the Pawl Operating Arm and move it top to the front. Spring tension between it and the Feed Roll Stop Pawl will move the pawl into the teeth of the Feed Roll Ratchet pinned to the Feed Roll Line preventing it from being "overthrown".

The Feed Roll Stop Pawl is made flexible in the event, when it is moved top to the front, it contacts a tooth of the Feed Roll Ratchet. This prevents damage to the Feed Roll Ratchet and the Feed Roll Stop Pawl.

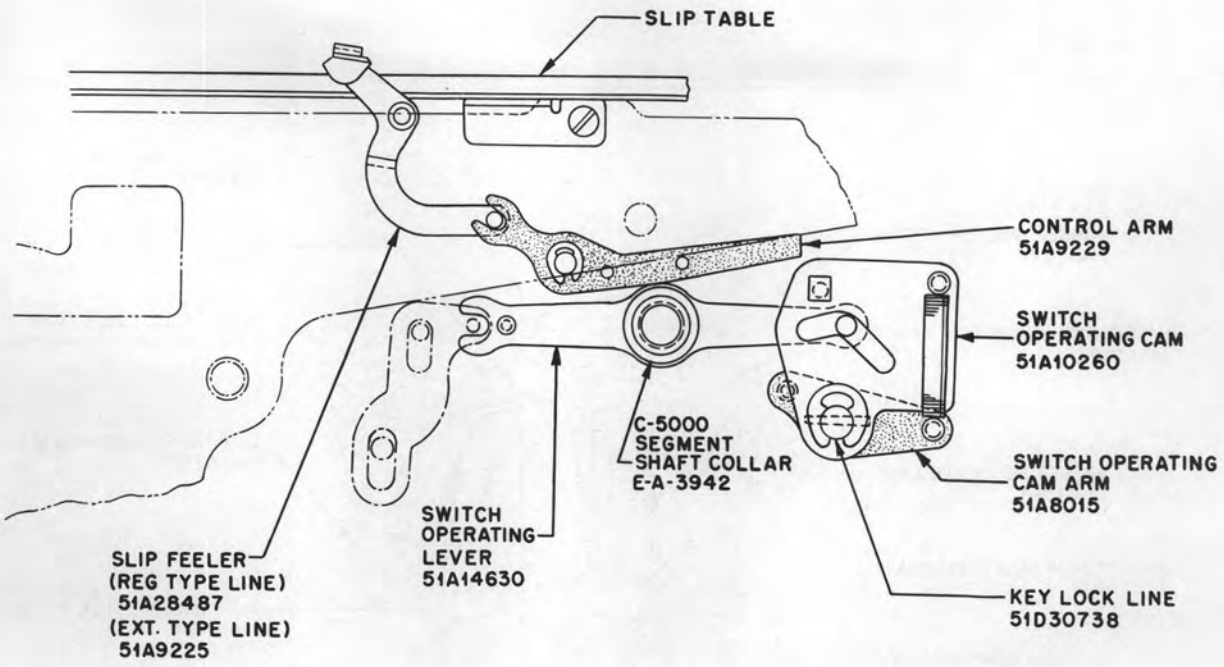
COMPULSORY SLIP FEELER



COMPULSORY SLIP PRINTER

On machines constructed with a Compulsory Slip Printer, it is compulsory to insert a slip on the Slip Table to enable the machine to trip. This type Slip Printer is commonly used with Consecutive Feed Construction.

When a slip is inserted, the Slip Feeder 51A28487 is moved up until it contacts the slip. The lower portion has a stud in it that is yoked by the Control Arm 51A9229. This arm is moved down slightly in the front but not far enough to be moved into the path of the stud in the Switch Operating Cam which is assembled on the extreme left end of the Key Lock Line. This permits the Key Lock Line to trip releasing the machine to operate.

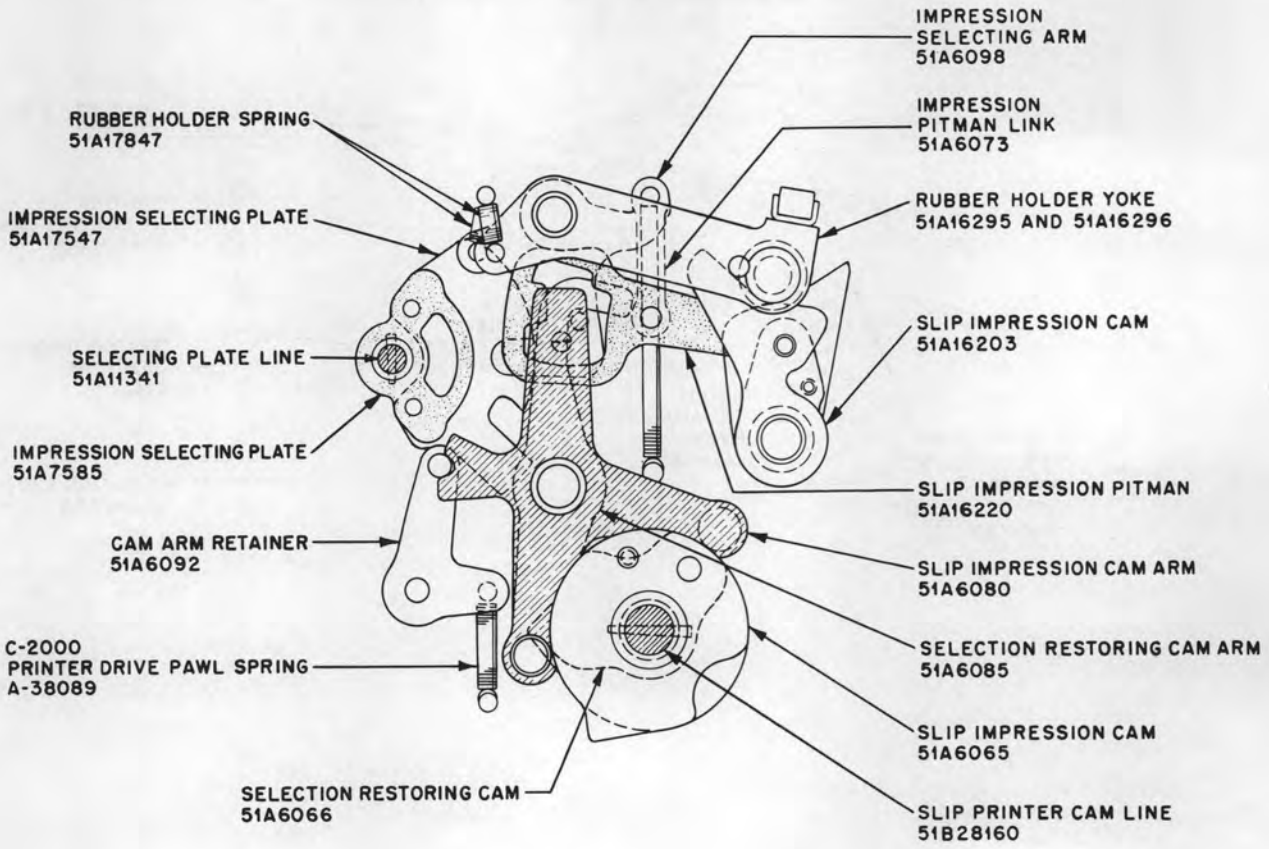


Disabling Compulsory Slip Feeder

In some instances, it may be desirous to disable the Compulsory Slip Feeder. The forethought of the Engineering Department on this type Slip Printer has made this an easy task.

By holding the front end of the Control Arm up and placing the C-5000 Segment Shaft Collar over the stud on which the Switch Operating Lever is swung, the Slip Feeler will be disabled by holding the control arm above the square stud in the Switch Operating Cam.

TWO COLUMN SQUEEZE IMPRESSION


IMPRESSION SELECTING ARM 51A6098
IMPRESSION PITMAN LINK 51A6073
RUBBER HOLDER SPRING 51A17847
RUBBER HOLDER YOKE 51A16295 AND 51A16296
IMPRESSION SELECTING PLATE 51A17547
SLIP IMPRESSION CAM 51A16203
SELECTING PLATE LINE 51A11341
IMPRESSION SELECTING PLATE 51A7585
SLIP IMPRESSION PITMAN 51A16220
CAM ARM RETAINER 51A6092
SLIP IMPRESSION CAM ARM 51A6080
C-2000 PRINTER DRIVE PAWL SPRING A-38089
SELECTION RESTORING CAM ARM 51A6085
SLIP IMPRESSION CAM 51A6065
SELECTION RESTORING CAM 51A6066
SLIP PRINTER CAM LINE 51B28160

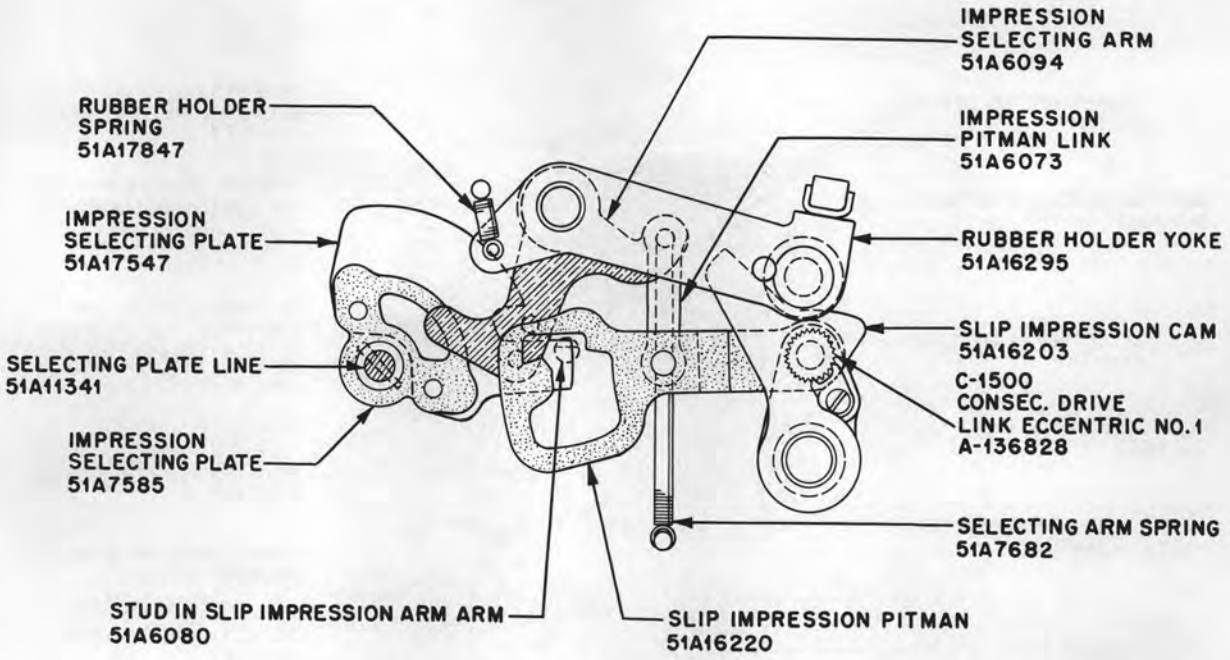
TWO COLUMN SQUEEZE IMPRESSION

The Two Column Squeeze Impression is a feature constructed for customer order. It is used to separate the prints on the slip of Item and Total or Item, Total and Date-Consecutive Number prints.

This type construction is used most commonly with Consecutive Feed of the slip so that items are printed in the left column and totals are printed in the right column.

The control of the impression is from the Unit Lock Lever and the Transaction Keys.

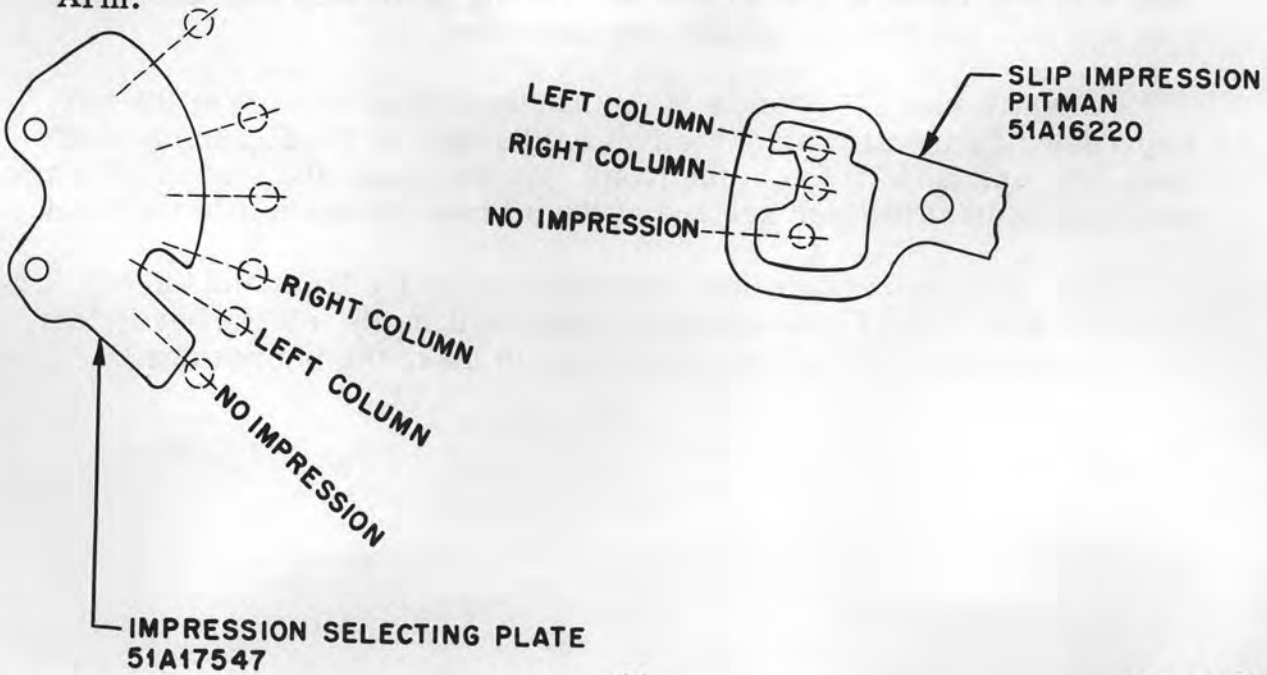
LEFT COLUMN IMPRESSION ITEM OPERATION


IMPRESSION SELECTING ARM 51A6094
RUBBER HOLDER SPRING 51A17847
IMPRESSION PITMAN LINK 51A6073
IMPRESSION SELECTING PLATE 51A17547
RUBBER HOLDER YOKE 51A16295
SLIP IMPRESSION CAM 51A16203
SELECTING PLATE LINE 51A11341
C-1500 CONSEC. DRIVE LINK ECCENTRIC NO.1 A-136828
IMPRESSION SELECTING PLATE 51A7585
SELECTING ARM SPRING 51A7682
STUD IN SLIP IMPRESSION ARM ARM 51A6080
SLIP IMPRESSION PITMAN 51A16220

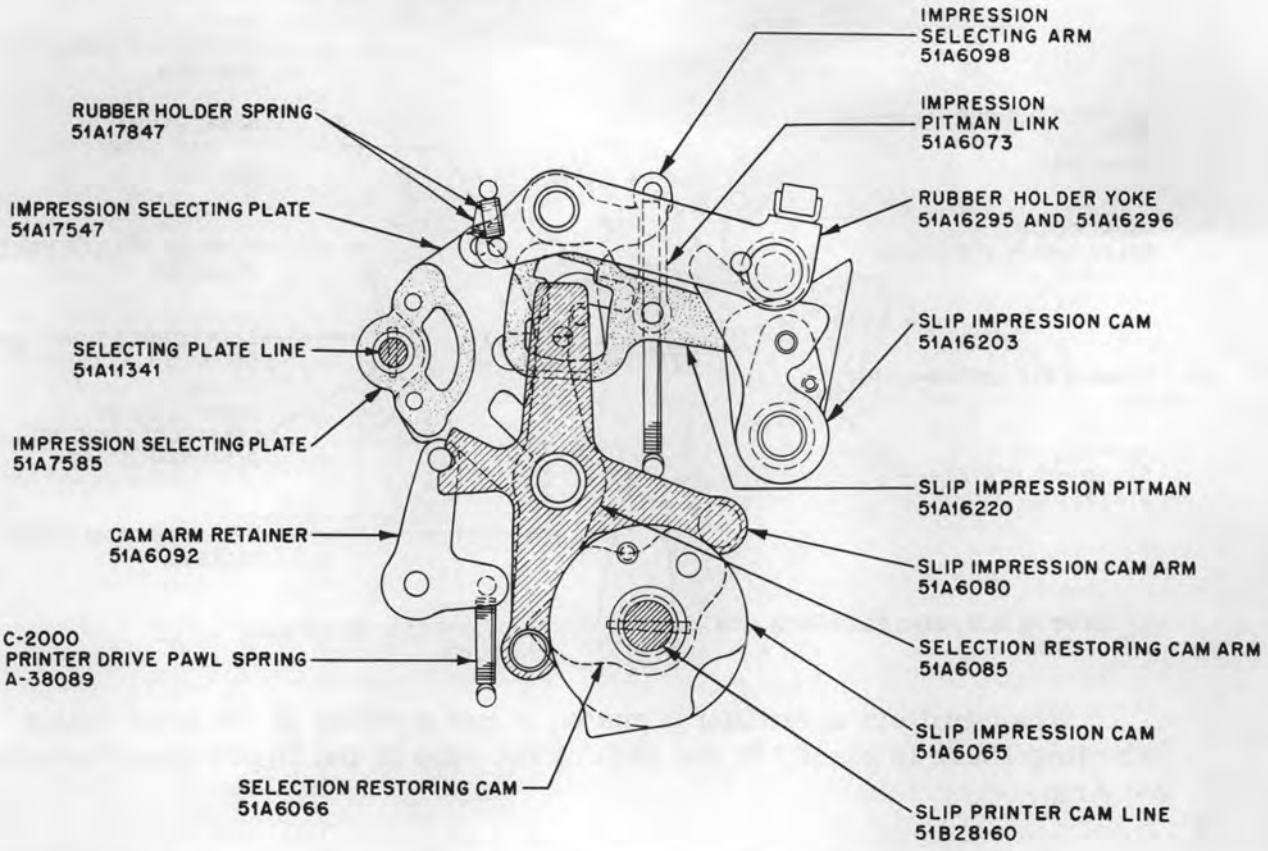
When an Item operation is made, a low surface of the Impression Selecting Plate is placed in the path of the stud in the Impression Selecting Arm.

When the Selection Restoring Cam Arm is freed up by the Selecting Restoring Cam, spring tension on the Impression Selecting Arm will cause it to move top to the front its full distance. The Impression Pitman Link and Slip Impression Pitman are moved down.

When the Selecting Restoring Cam Arm is freed up by the Selecting Restoring Cam, spring tension on the Impression Selecting Arm causes it to move top to the front its full distance. The Impression Pitman Link and Slip Impression Pitman are moved down placing a high surface of the pitman in front of the stud in the Slip Impression Cam Arm.



TWO COLUMN SQUEEZE IMPRESSION

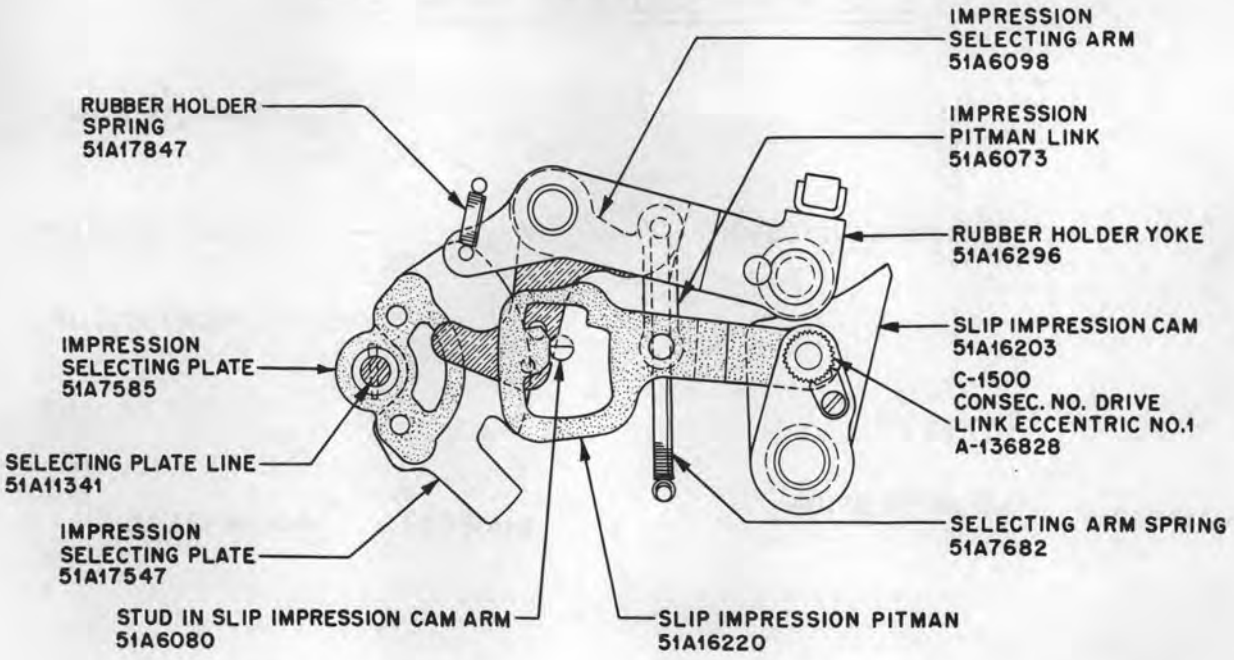

IMPRESSION SELECTING ARM 51A6098
IMPRESSION PITMAN LINK 51A6073
RUBBER HOLDER SPRING 51A17847
IMPRESSION SELECTING PLATE 51A17547
RUBBER HOLDER YOKE 51A16295 AND 51A16296
SLIP IMPRESSION CAM 51A16203
SELECTING PLATE LINE 51A11341
IMPRESSION SELECTING PLATE 51A7585
SLIP IMPRESSION PITMAN 51A16220
CAM ARM RETAINER 51A6092
SLIP IMPRESSION CAM ARM 51A6080
C-2000 PRINTER DRIVE PAWL SPRING A-38089
SELECTION RESTORING CAM ARM 51A6085
SLIP IMPRESSION CAM 51A6065
SELECTION RESTORING CAM 51A6066
SLIP PRINTER CAM LINE 51B28160

Just before 1-1/8 turn of the handle, a high surface of the right Impression Cam will move under the front roll and stud in the Slip Impression Cam Arm and move it top to the back. At this time, the stud in the cam arm will move to the back in the opening of the Slip Impression Pitman and will not give the pitman any movement.

Slightly past 1-1/2 turns of the handle, a high surface of the left Impression Cam will contact the roll on the back of the Slip Impression Cam Arm and move it top to the front. At this time, the stud in the Cam Arm will contact the high surface of the pitman and move it to the front.

The Slip Impression Cam will move top to the front and the left portion of it will contact the Impression Cam Roll in the left Rubber Holder Yoke moving the yoke up against the type to make the impression.

RIGHT COLUMN IMPRESSION TOTAL OPERATION


IMPRESSION SELECTING ARM 51A6098
RUBBER HOLDER SPRING 51A17847
IMPRESSION PITMAN LINK 51A6073
RUBBER HOLDER YOKE 51A16296
SLIP IMPRESSION CAM 51A16203
IMPRESSION SELECTING PLATE 51A7585
C-1500 CONSEC. NO. DRIVE LINK ECCENTRIC NO.1 A-136828
SELECTING PLATE LINE 51A11341
SELECTING ARM SPRING 51A7682
IMPRESSION SELECTING PLATE 51A17547
STUD IN SLIP IMPRESSION CAM ARM 51A6080
SLIP IMPRESSION PITMAN 51A16220

Whenever a total operation is made, an intermediate surface of the Impression Selecting Plate is placed in the path of the stud in the Impression Selecting Arm.

When the low surface of the Selecting Restoring Cam is moved under the roll on the Selecting Restoring Cam Arm, spring tension on the Impression Selecting Arm will cause it to move top to the front until it is stopped by the stud contacting the intermediate step of the Impression Selecting Plate.

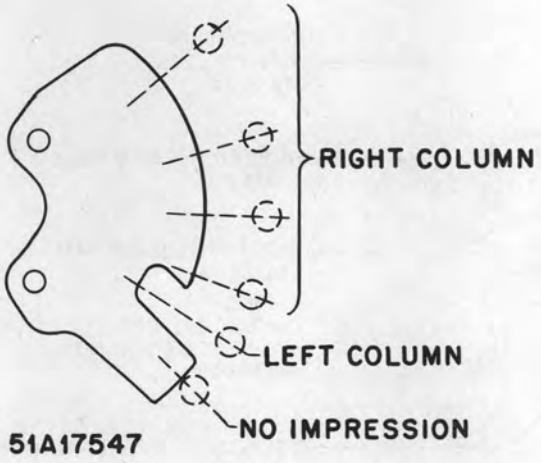
The Impression Pitman Link and Slip Impression Pitman are moved down so as to place a high surface of the pitman in back of the stud in the Slip Impression Cam Arm.

Just before 1-1/8 turn of the handle, a high surface of the right Slip Impression Cam will contact the front roll on the Slip Impression Cam Arm and move it top to the back. The stud in the cam arm will contact the high surface of the Slip Impression Pitman and move it to the back.

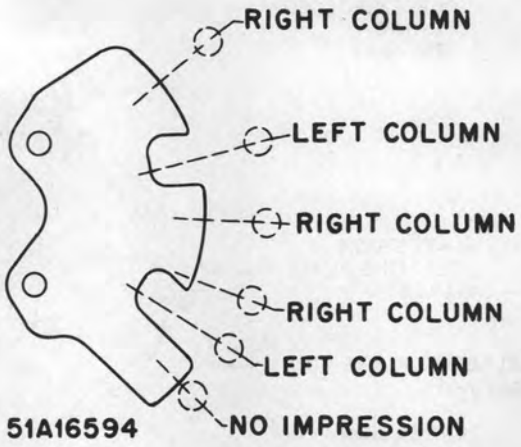
The Slip Impression Cam is moved top to the back and the right portion of the cam will contact the Impression Cam Roll in the right Rubber Holder Yoke and move the yoke up to make the impression in the right column.

Slightly past 1-1/2 turns of the handle, the high surface of the left Impression Cam will contact the back roll on the Slip Impression Cam Arm and cause it to move top to the front. At this time, the stud in the Cam Arm moves idly forward giving no movement to the Slip Impression Pitman.

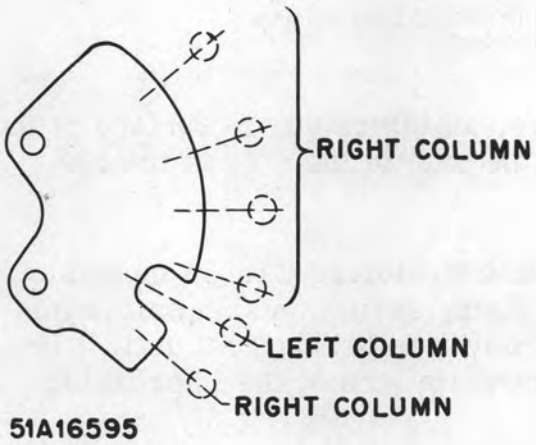
IMPRESSION SELECTING PLATES
(WITH STUD IN IMPRESSION SELECTING ARM)
2 COLUMN SQUEEZE IMPRESSION



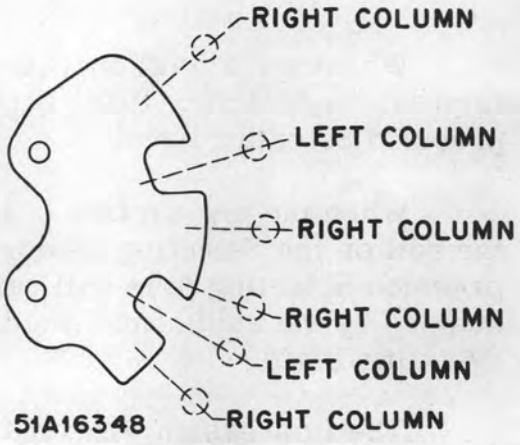
51A17547



51A16594



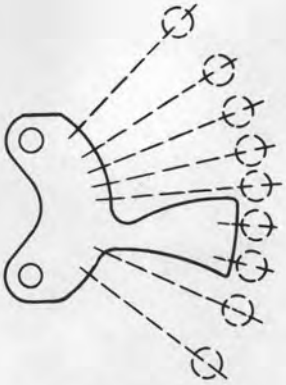
51A16595



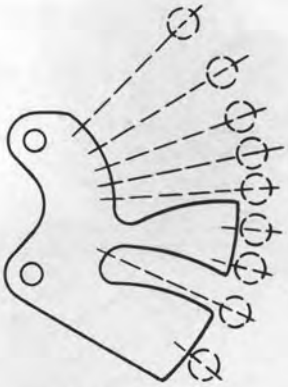
51A16348

The previous explanation was for the impression when controlled from the Impression Selecting Plate 51A26398. There are four different selecting plates listed on the Two Column Squeeze Impression Slip Printer. The drawing shown will illustrate the different selecting plates and how they control the selection of the right and left impression.

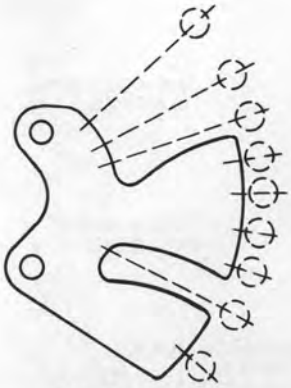
SLIP FEED SELECTING PLATES
(WITH STUD IN SLIP FEED ARM)
2 COLUMN SQUEEZE IMPRESSION



51A17545



51A17544



51A17546

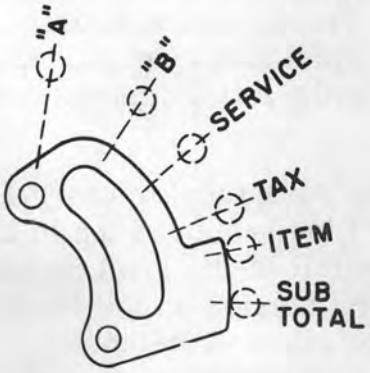
The Slip Feed, as was previously explained, on this style Slip Printer most commonly used is Consecutive Feed. However, it is possible to have the printer constructed with either open or closed Feed Rolls.

The drawing shown will illustrate the various Slip Feed Selecting and Feed Roll Control Plates and how they control the Feed Rolls and Slip Feed.

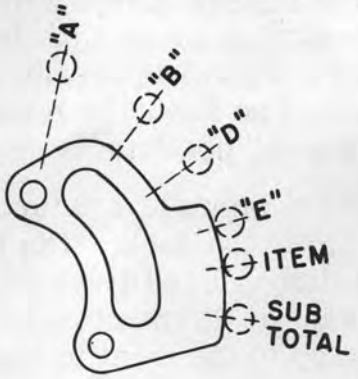
As it has been previously explained in Slip Feed, all the Transaction Keys can control the feed of the slip. The high surface of the Selecting Plates disables Slip Feed; the low surfaces able Slip Feed.

The Slip Tension is controlled from the Transaction Keys. There are high and low surfaces on the Selecting Plates which are positioned in the path of the stud in the Pitman Control Arm 51A28086. The low surface will cause the Feed Rolls to open and high surface will cause the Feed Rolls to open and high surface will cause them to remain closed once they are closed.

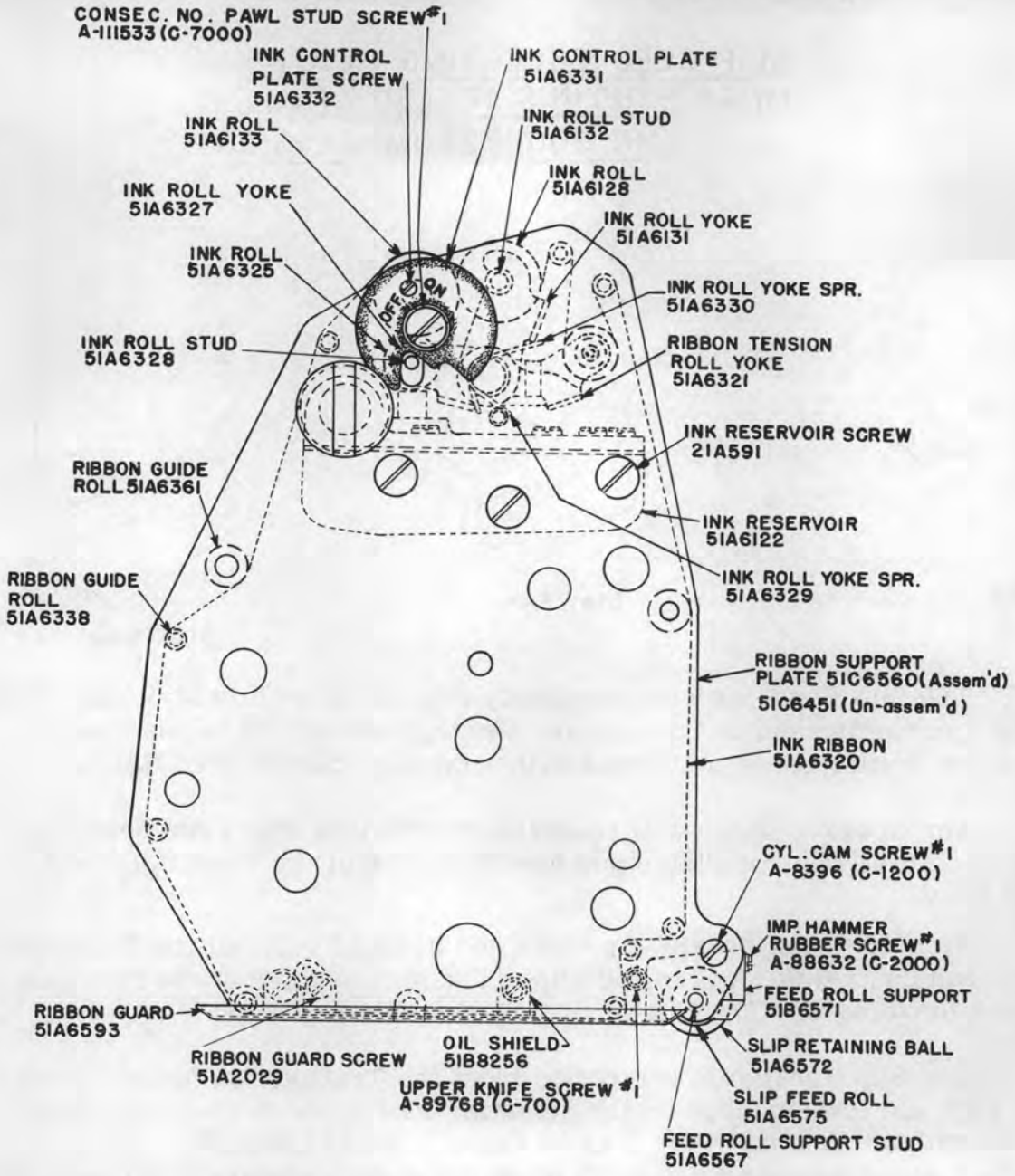
FEED ROLL CONTROL PLATE
(WITH STUD IN PITMAN CONTROL ARM 51A28086)



51A28320



51A11301



SLIP PRINTER RIBBON MECHANISM

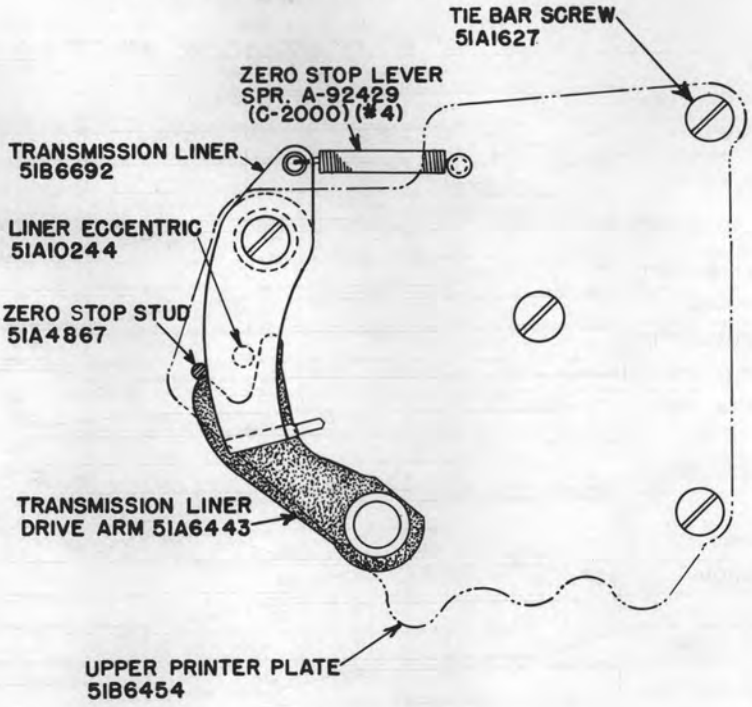
The Ribbon for the Slip Printer is spaced each time the Indicator Liner moves top to the back to unlock the Indicator Pinions.

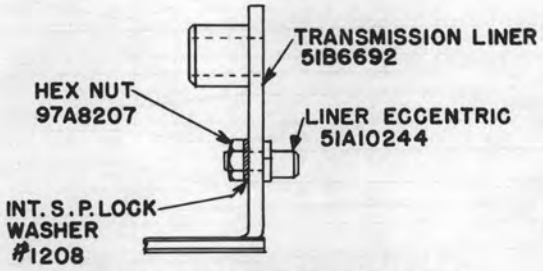
The Ratchet Drive Arm 51A13617 is pinned to the extreme left end of the Indicator Liner Line beyond the left Transmission Frame. The Ribbon Feed Pawl is assembled to this arm and under spring tension to the back. The Pawl, is resting on a stud in the left Transmission Frame in its "Home" position.

From Home to 1/8 turn of the handle, the Indicator Liner Line is moved top to the back. The Ratchet Drive Line is moved top to the back and the Ribbon Feed Pawl moves up and the tail of the Pawl moves off the stud in the Transmission Frame. Spring tension on the Pawl will move it top to the front to engage the Ribbon Ink Roll Ratchet.

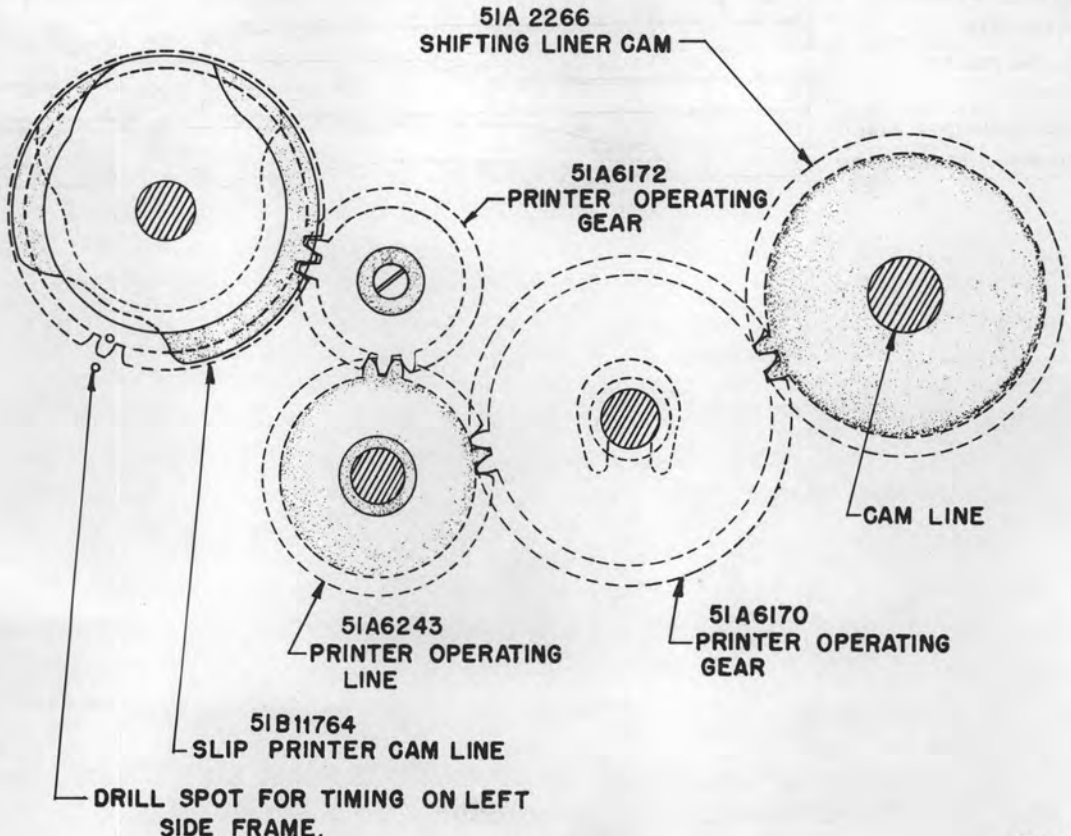
As continued movement is given the Ratchet Drive Arm, the Pawl will turn the Ribbon Ink Roll to space the Slip Printer Ribbon.

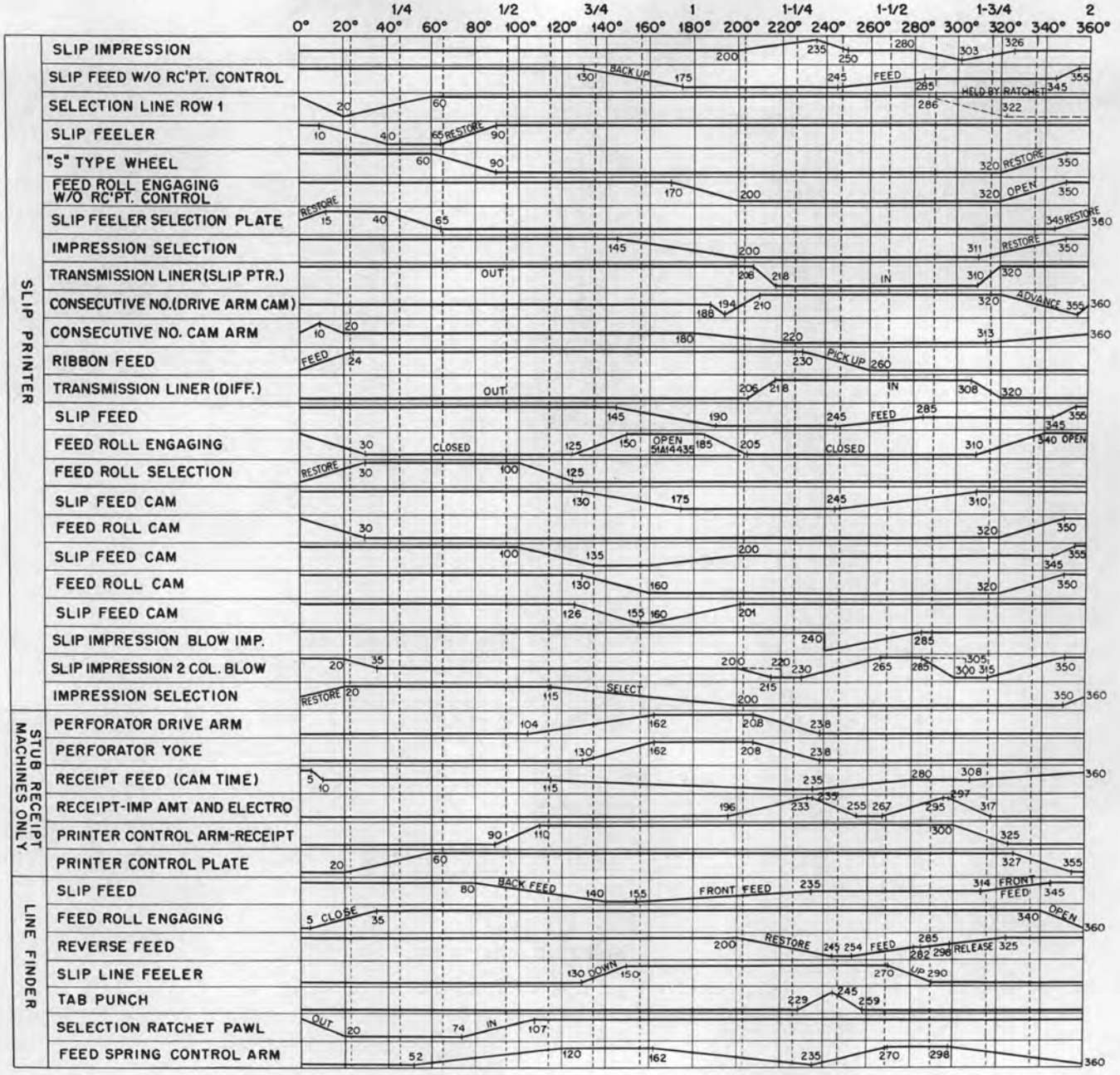
TRANSMISSION LINER - SLIP PRINTER





PRINTER DRIVE MECHANISM




1/4
1/2
3/4
1
1-1/4
1-1/2
1-3/4
2
0° 20° 40° 60° 80° 100° 120° 140° 160° 180° 200° 220° 240° 260° 280° 300° 320° 340° 360°
SLIP PRINTER
SLIP IMPRESSION
SLIP FEED W/O RC'PT. CONTROL
BACK UP
FEED
HELD BY RATCHET
SELECTION LINE ROW 1
SLIP FEELER
RESTORE
"S" TYPE WHEEL
FEED ROLL ENGAGING W/O RC'PT. CONTROL
OPEN
SLIP FEELER SELECTION PLATE
IMPRESSION SELECTION
TRANSMISSION LINER(SLIP PTR.)
OUT
IN
CONSECUTIVE NO.(DRIVE ARM CAM)
ADVANCE
CONSECUTIVE NO. CAM ARM
RIBBON FEED
FEED
PICK UP
TRANSMISSION LINER (DIFF.)
SLIP FEED
FEED ROLL ENGAGING
CLOSED
OPEN
FEED ROLL SELECTION
SLIP FEED CAM
FEED ROLL CAM
SLIP FEED CAM
FEED ROLL CAM
SLIP FEED CAM
SLIP IMPRESSION BLOW IMP.
SLIP IMPRESSION 2 COL. BLOW
IMPRESSION SELECTION
SELECT
STUB RECEIPT MACHINES ONLY
PERFORATOR DRIVE ARM
PERFORATOR YOKE
RECEIPT FEED (CAM TIME)
RECEIPT-IMP AMT AND ELECTRO
PRINTER CONTROL ARM-RECEIPT
PRINTER CONTROL PLATE
LINE FINDER
SLIP FEED
BACK FEED
FRONT FEED
FEED ROLL ENGAGING
CLOSE
OPEN
REVERSE FEED
RESTORE
FEED
RELEASE
SLIP LINE FEELER
DOWN
UP
TAB PUNCH
SELECTION RATCHET PAWL
OUT
IN
FEED SPRING CONTROL ARM

SECTION "R"

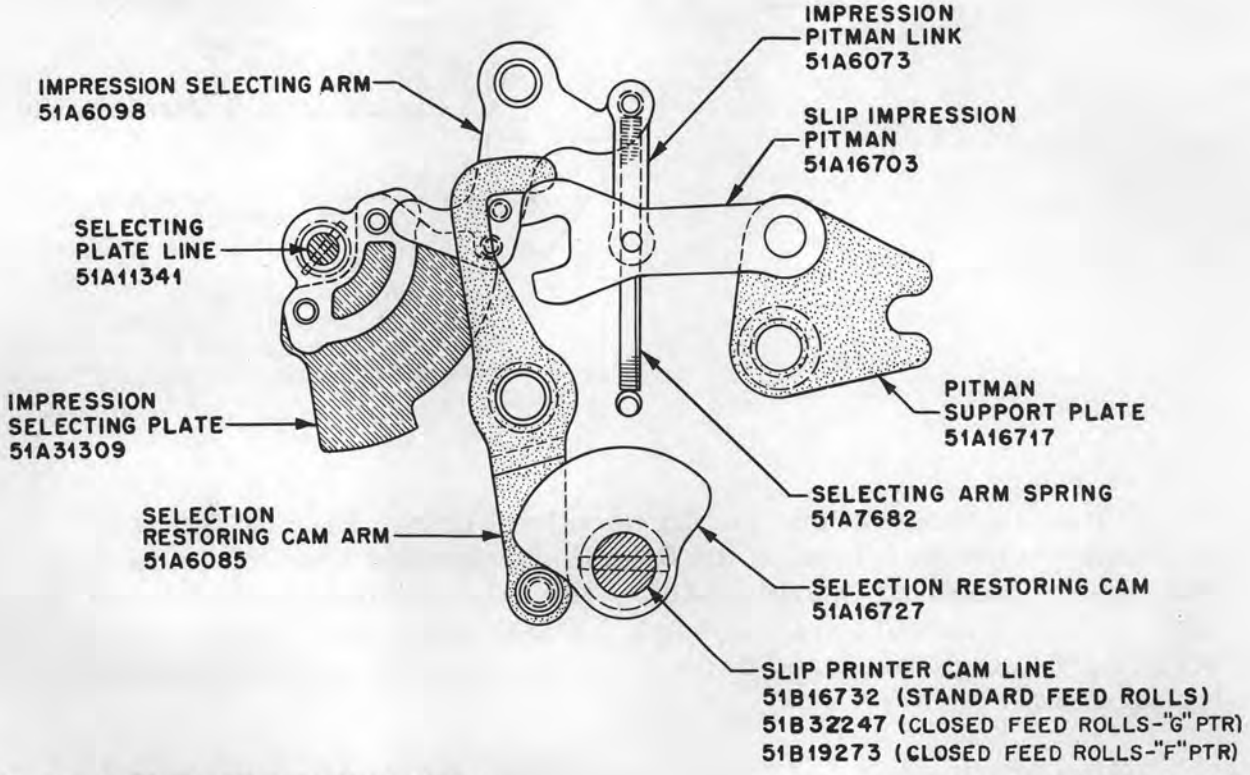
BLOW IMPRESSION

All C-52 Slip Printer machines that are constructed for Department Store use are being built as standard construction with Blow Impression on the Slip Printer unless the machine is ordered otherwise.

The Blow Impression on the Slip Printer has been designed to give a clear, percise print on the slip when multiple copies are needed.

Blow Impression is designed in both single and double column in almost any type Slip Printer desired. For the purpose of this explanation, only the control of the impression and the impression will be covered. For the various slip feeds and slip tensions, refer to the Slip Printer Section of this Service Manual.

SELECTION RESTORING (BLOW IMPRESSION) "HOME" TO 1/8 TURN OF HANDLE


IMPRESSION PITMAN LINK 51A6073
IMPRESSION SELECTING ARM 51A6098
SLIP IMPRESSION PITMAN 51A16703
SELECTING PLATE LINE 51A11341
IMPRESSION SELECTING PLATE 51A31309
PITMAN SUPPORT PLATE 51A16717
SELECTING ARM SPRING 51A7682
SELECTION RESTORING CAM ARM 51A6085
SELECTION RESTORING CAM 51A16727
SLIP PRINTER CAM LINE
51B16732 (STANDARD FEED ROLLS)
51B32247 (CLOSED FEED ROLLS-"G" PTR)
51B19273 (CLOSED FEED ROLLS-"F" PTR)

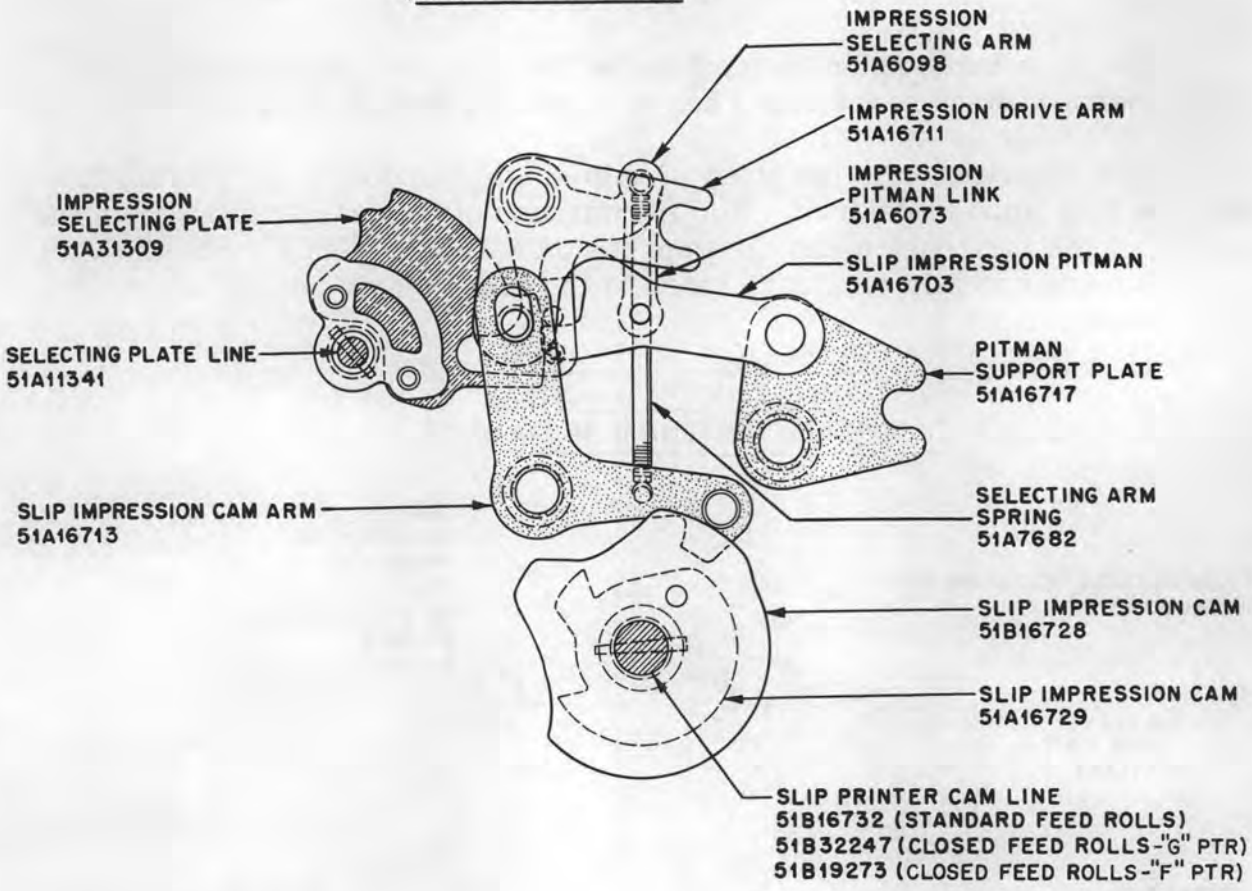
Single Column Blow Impression

The control on the Single Column Blow Impression is from the Transaction Keys and the Slip Feeder. In some instances, machines with this type impression may also have a "Sales Slip" key to control the impression. This mechanism is covered under the Slip Printer Section of this manual.

Impression Selection - Transaction Key Control - Item Operation

From home to 1/8 turn of the handle, the Selecting Restoring Cam Arm is moved top to the front picking up the stud in the Impression Selecting Arm and moving to the front.

IMPRESSION SELECTION
ITEM OPERATION
(BLOW IMPRESSION)

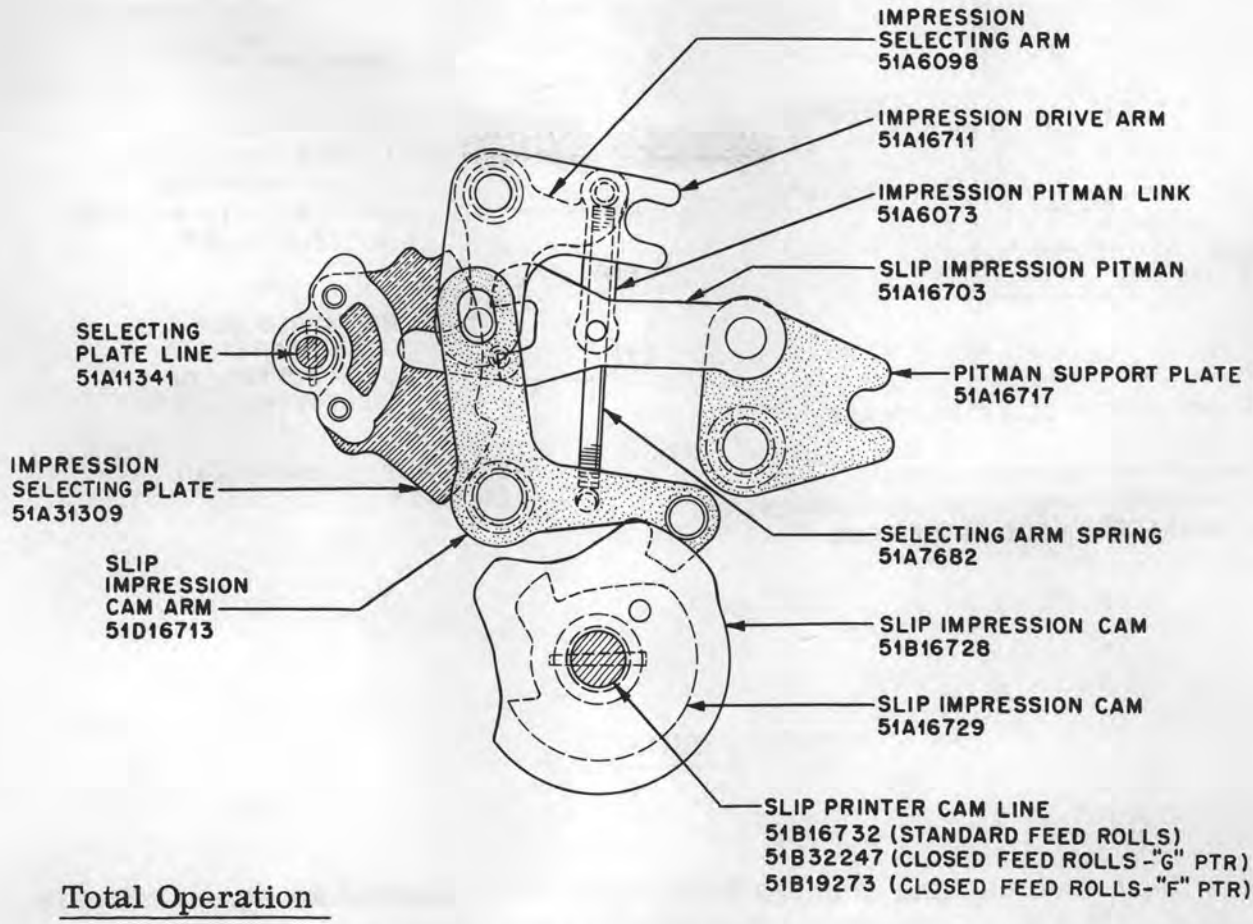

IMPRESSION SELECTING ARM 51A6098
IMPRESSION DRIVE ARM 51A16711
IMPRESSION PITMAN LINK 51A6073
IMPRESSION SELECTING PLATE 51A31309
SLIP IMPRESSION PITMAN 51A16703
SELECTING PLATE LINE 51A11341
PITMAN SUPPORT PLATE 51A16717
SLIP IMPRESSION CAM ARM 51A16713
SELECTING ARM SPRING 51A7682
SLIP IMPRESSION CAM 51B16728
SLIP IMPRESSION CAM 51A16729
SLIP PRINTER CAM LINE 51B16732 (STANDARD FEED ROLLS) 51B32247 (CLOSED FEED ROLLS-"G" PTR) 51B19273 (CLOSED FEED ROLLS-"F" PTR)

On an item operation, the Consecutive Number Driving Pitman is positioned to the back moving the Selecting Operating Line top to the back. Through the Selecting Operating Link, the Selecting Ratchet and Selecting Plate Line are moved top to the back. A high surface of the Impression Selecting Plate is positioned in the path of the stud in the Impression Selecting Arm.

At approximately 1/2 turn of the handle, the Selection Ratchet Pawl is moved top to the back and the stud in the Pawl locks into the teeth of the Selecting Ratchet retaining the Selecting Plate Line in position.

Between 7/8 and 1-1/8 turns of the handle, the low surface of the Selecting Restoring Cam is moved under the roll in the Selecting Restoring Cam Arm bringing it up. At this time, spring tension on the Impression Selecting Arm moves it top to the front until the stud in the arm contacts the high surface of the Impression Selecting Plate. Through the Impression Pitman Link, the Slip Impression Pitman is held up so that the upper extension on the back of the pitman is held in the path of the stud in the Impression Drive Arm disabling the impression.

IMPRESSION SELECTION
TOTAL OPERATION
(BLOW IMPRESSION)


IMPRESSION SELECTING ARM 51A6098
IMPRESSION DRIVE ARM 51A16711
IMPRESSION PITMAN LINK 51A6073
SLIP IMPRESSION PITMAN 51A16703
SELECTING PLATE LINE 51A11341
PITMAN SUPPORT PLATE 51A16717
IMPRESSION SELECTING PLATE 51A31309
SELECTING ARM SPRING 51A7682
SLIP IMPRESSION CAM ARM 51D16713
SLIP IMPRESSION CAM 51B16728
SLIP IMPRESSION CAM 51A16729
SLIP PRINTER CAM LINE 51B16732 (STANDARD FEED ROLLS) 51B32247 (CLOSED FEED ROLLS -"G" PTR) 51B19273 (CLOSED FEED ROLLS-"F" PTR)

Total Operation

When a Total key in the Transaction Keybank is used to complete a sequence of operation, the Impression Selecting Plate is positioned so as to place an intermediate surface in the path of the stud in the Impression Selecting Arm.

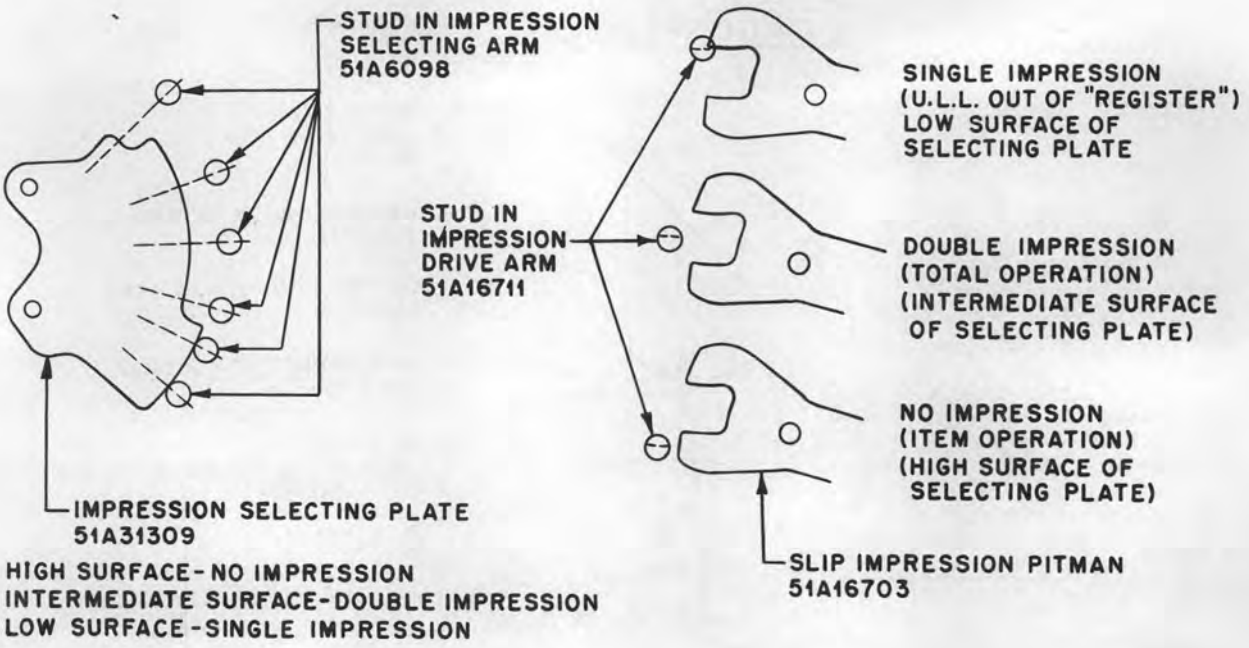
When the Selecting Restoring Cam Arm is free to move top to the back by the low surface of the Selecting Restoring Cam coming under the roll in the Cam Arm, spring tension on the Impression Selecting Arm moves it top to the front until the stud in the arm contacts the intermediate surface of the Impression Selecting Plate.

The Impression Pitman Link is moved down, moving the Slip Impression Pitman down so as to place the cut-out portion of it in the path of the stud in the Impression Mechanism

Impression Selection - Slip Feeler Control

The Slip Feeler control on the Blow Impression mechanism is identical to that of Squeeze Impression. The Slip Feeler must be held down before the impression is abled. This is done through the Slip Feeler Selecting Plate, Selecting Plate Retainer and the Slip Feeler.

For the mechanical explanation of the Slip Feeler Control, refer to the Slip Printer Section of this manual.


STUD IN IMPRESSION SELECTING ARM 51A6098
SINGLE IMPRESSION (U.L.L. OUT OF "REGISTER") LOW SURFACE OF SELECTING PLATE
STUD IN IMPRESSION DRIVE ARM 51A16711
DOUBLE IMPRESSION (TOTAL OPERATION) (INTERMEDIATE SURFACE OF SELECTING PLATE)
NO IMPRESSION (ITEM OPERATION) (HIGH SURFACE OF SELECTING PLATE)
IMPRESSION SELECTING PLATE 51A31309
HIGH SURFACE-NO IMPRESSION
INTERMEDIATE SURFACE-DOUBLE IMPRESSION
LOW SURFACE-SINGLE IMPRESSION
SLIP IMPRESSION PITMAN 51A16703

IMPRESSION

Total Operation

When the machine is operated on the Total operation as was previously explained, the Slip Impression Pitman is allowed to move down until the cut-out portion is in the path of the stud in the Impression Drive Arm.

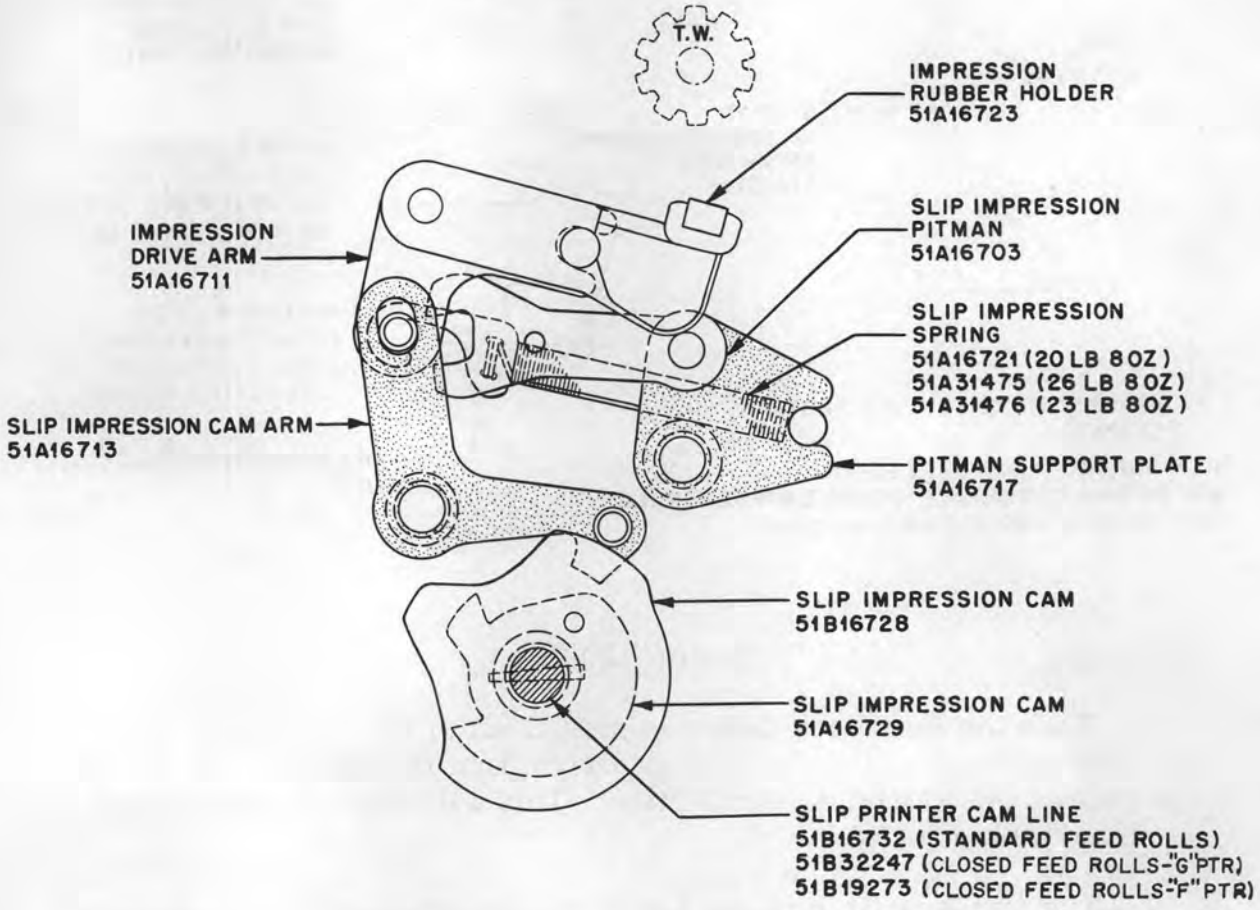
Between 1/8 and 1/4 turn of the handle, the high surface of the Slip Impression Cam 51B16728 moves away from the roll on the Slip Impression Cam Arm. This arm yokes the stud in the Impression Drive Arm which is under spring tension top to the back. At this time, the Impression Drive Arm will move slightly top to the back but on this type operation this movement has no function.

At 1-1/8 turn of the handle, the intermediate portion of the Slip Impression Cam Arm moves from under the roll on the Slip Impression Cam Arm. The cam arm will move top to the front until the "foot" of the cam arm contacts the surface on the Slip Impression Cam 51A16729.

Slightly past 1-1/8 turn of the handle, a sharp drop of the slip Impression Cam Arm will move under the "foot" of the Cam Arm. At this time, the Slip Impression Spring will cause the Impression Drive Arm to snap top to the front raising the Impression Rubber Holder up against the type wheels to make the impression.

The stud in the Impression Drive Arm moves into the cut out portion of the Slip Impression Pitman.

IMPRESSION MECHANISM
(BLOW IMPRESSION)

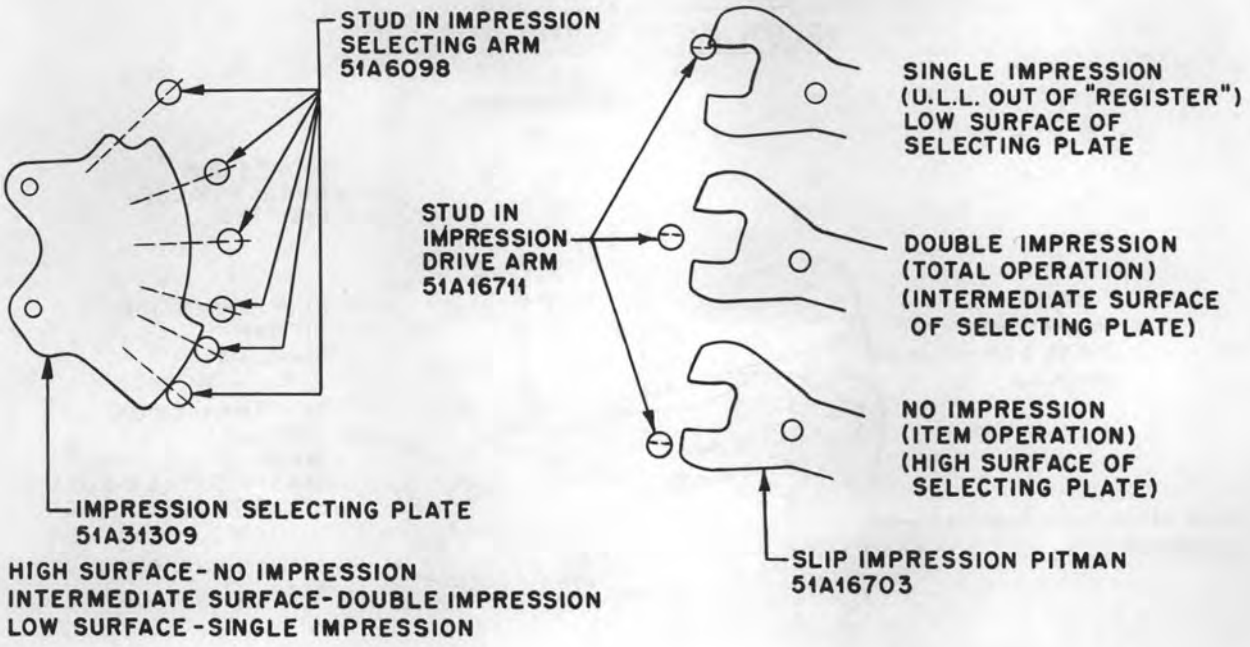

T.W.
IMPRESSION RUBBER HOLDER 51A16723
SLIP IMPRESSION PITMAN 51A16703
IMPRESSION DRIVE ARM 51A16711
SLIP IMPRESSION SPRING 51A16721 (20 LB 8 OZ) 51A31475 (26 LB 8 OZ) 51A31476 (23 LB 8 OZ)
SLIP IMPRESSION CAM ARM 51A16713
PITMAN SUPPORT PLATE 51A16717
SLIP IMPRESSION CAM 51B16728
SLIP IMPRESSION CAM 51A16729
SLIP PRINTER CAM LINE 51B16732 (STANDARD FEED ROLLS) 51B32247 (CLOSED FEED ROLLS-"G"PTR) 51B19273 (CLOSED FEED ROLLS-"F"PTR)

Slightly past 1-1/4 turn of the handle, the high surface of the Slip Impression Cam 51B16728 will move under the roll on the Slip Impression Cam Arm and move it top to the back. The Impression Drive Arm is moved top to the front lowering the Impression Rubber Holder and the stud in the Arm moves out in the cut out portion of the Slip Impression Pitman with lead.

Just before 1-3/4 turn of the handle, the high surface of the Slip Impression Cam will move from under the roll in the Slip Impression Cam Arm. The arm will move top to the front again until the "foot" contacts the surface of the Slip Impression Cam.

Immediately following another sharp drop of the cam will move under the "foot" of the Slip Impression Cam Arm and the Slip Impression Spring will cause the Impression Drive Arm and Impression Rubber Holder to snap up making the second impression on the slip.

Right before 2 turns of the handle, a high surface of the Slip Impression Cam will be moved under the roll on the Slip Impression Cam Arm restoring the Drive Arm and Impression Rubber Holder to their home position.


STUD IN IMPRESSION SELECTING ARM 51A6098
STUD IN IMPRESSION DRIVE ARM 51A16711
SINGLE IMPRESSION (U.L.L. OUT OF "REGISTER") LOW SURFACE OF SELECTING PLATE
DOUBLE IMPRESSION (TOTAL OPERATION) (INTERMEDIATE SURFACE OF SELECTING PLATE)
NO IMPRESSION (ITEM OPERATION) (HIGH SURFACE OF SELECTING PLATE)
IMPRESSION SELECTING PLATE 51A31309
HIGH SURFACE-NO IMPRESSION
INTERMEDIATE SURFACE-DOUBLE IMPRESSION
LOW SURFACE-SINGLE IMPRESSION
SLIP IMPRESSION PITMAN 51A16703

Unit Lock Lever Out Of "Register" Position

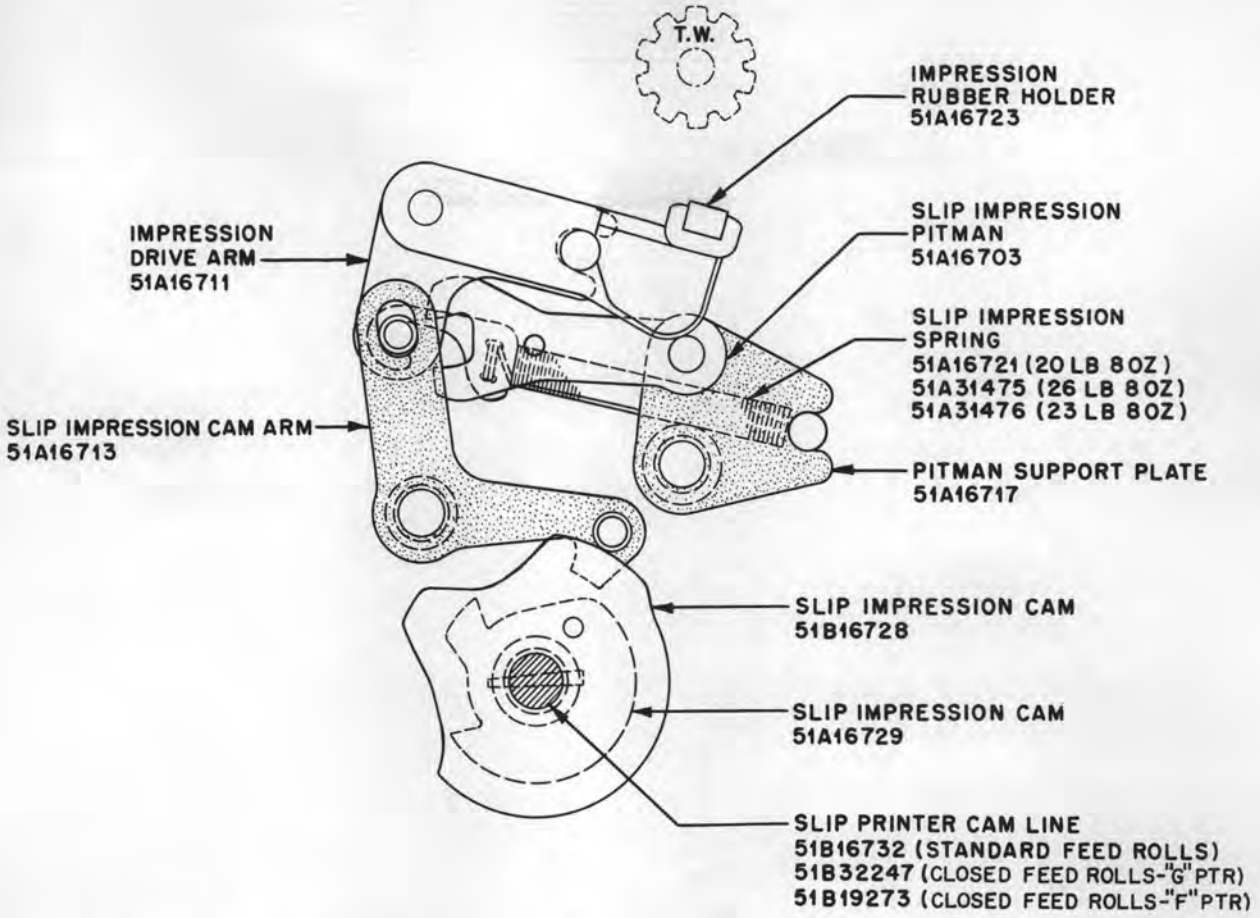
When the Unit Lock Lever is moved out of the "Register" position in either direction, the Controlling Drive Arm is positioned down into the path of the Printer Control Plate. This will stop the plate in the tenth keybank position.

The Consecutive Number Drive Pitman will receive no movement and therefore the Selecting Operating Line will remain top to the front.

The Impression Selecting Plate has a low surface in the path of the stud in the Impression Selecting Arm in this position.

Between 1/8 and 1/4 turn of the handle, the high surface of the Slip Impression Cam 51B16728 will move away from the roll on the Slip Impression Cam Arm. The Slip Impression Spring will move the Slip Impression Cam Arm slightly top to the front. This arm yokes the flatted stud in the Impression Drive Arm and it will be moved top to the back. The "flatted" stud in this arm will move slightly to the front but not against the lower portion of the Slip Impression Pitman.

IMPRESSION MECHANISM
(BLOW IMPRESSION)


T.W.
IMPRESSION RUBBER HOLDER 51A16723
SLIP IMPRESSION PITMAN 51A16703
IMPRESSION DRIVE ARM 51A16711
SLIP IMPRESSION SPRING 51A16721 (20 LB 8 OZ) 51A31475 (26 LB 8 OZ) 51A31476 (23 LB 8 OZ)
SLIP IMPRESSION CAM ARM 51A16713
PITMAN SUPPORT PLATE 51A16717
SLIP IMPRESSION CAM 51B16728
SLIP IMPRESSION CAM 51A16729
SLIP PRINTER CAM LINE 51B16732 (STANDARD FEED ROLLS) 51B32247 (CLOSED FEED ROLLS-"G" PTR) 51B19273 (CLOSED FEED ROLLS-"F" PTR)

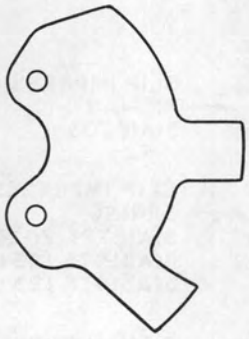
Between 7/8 and 1-1/8 turn of the handle, the low surface of the Selection Restoring Cam will be moved under the roll in the Selecting Cam Arm moving it up. Spring tension on the Impression Selecting Arm will move it top to the front and since there is a low surface in the path of the stud in the arm, it will move until the Slip Impression Pitman is stopped by the upper extension contacting the stud in the Impression Drive Arm. The cut out portion of the pitman will be in front of the stud in the Drive Arm.

At 1-1/8 turn of the handle, the impression is made on the slip. Slightly past 1-1/4 turns of the handle, a high surface of the Slip Impression Cam 51B16728 will move under the roll on the Slip Impression Cam Arm and move it top to the back.

Impression Drive Arm is moved top to the back lowering the Impression Rubber Holder. The stud in the Impression Drive Arm is moved to the back out of the cut out portion of the Pitman.

Since the stud stopped the Impression Pitman from moving all the way down in the back before the impression was made, the upper surface of the cut out portion rides on the stud and as soon as the stud is restored with lead, a spring tension on the Impression Selecting Arm will cause the Slip Impression Pitman to move all the way down in back. This places the upper extension of the pitman in the path of the stud in the Impression Drive Arm disabling the second impression of the slip.

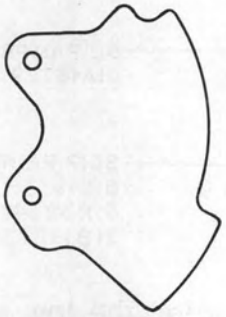
IMPRESSION SELECTING PLATES
BLOW IMPRESSION



51A16767

51A30369

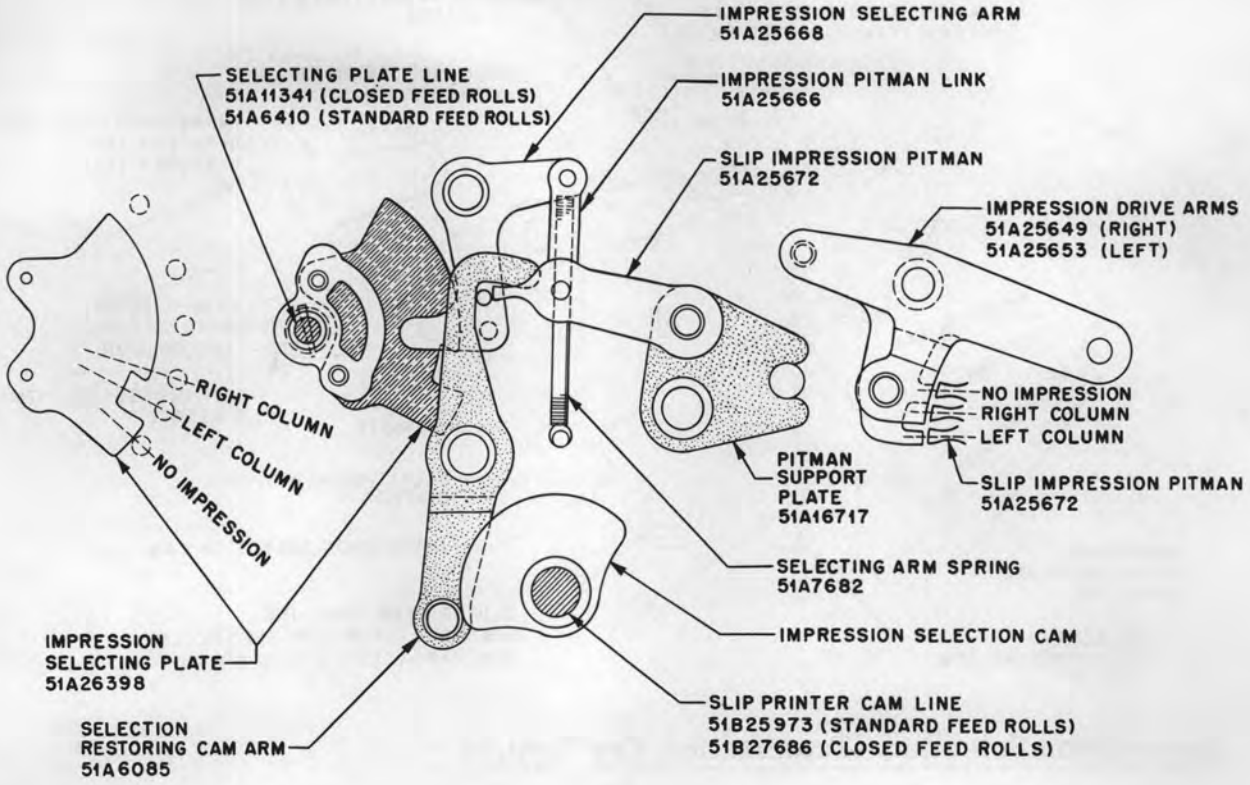
51A30667



51A31309

51A33913

IMPRESSION SELECTION
(2 COLUMN BLOW)



Two Column Blow Impression

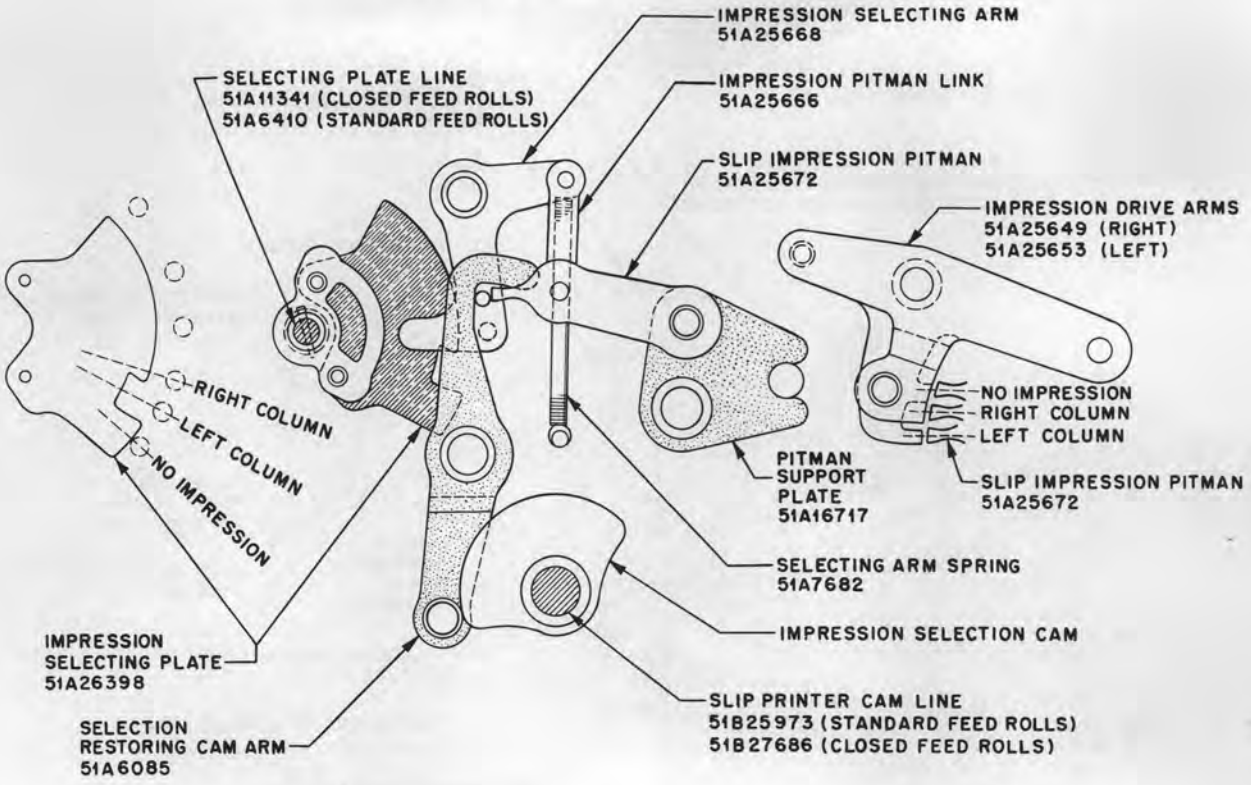
The Two Column Blow Impression Slip Printer is very similar to the Single Column Blow and Two Column Squeeze Impression.

The right Impression Hammer is used for printing totals and the left column is used to print items. The control of the impression is from the Transaction Keys and the Slip Feeler.

For the purpose of this explanation, only the Impression Selection and Impression will be covered as this style printer can be built with open or closed Feed Rolls, straight or consecutive feed and/or compulsory slip.

The Slip Feeler Control on this style printer is identical to that of any of the other printers.

IMPRESSION SELECTION
(2 COLUMN BLOW)



Impression Selection -Transaction Key Control

The Impression Selecting Plates used on this style Slip Printer have surfaces of three different heights. The different selecting Plates will vary with the variation of the Transaction Key arrangements.

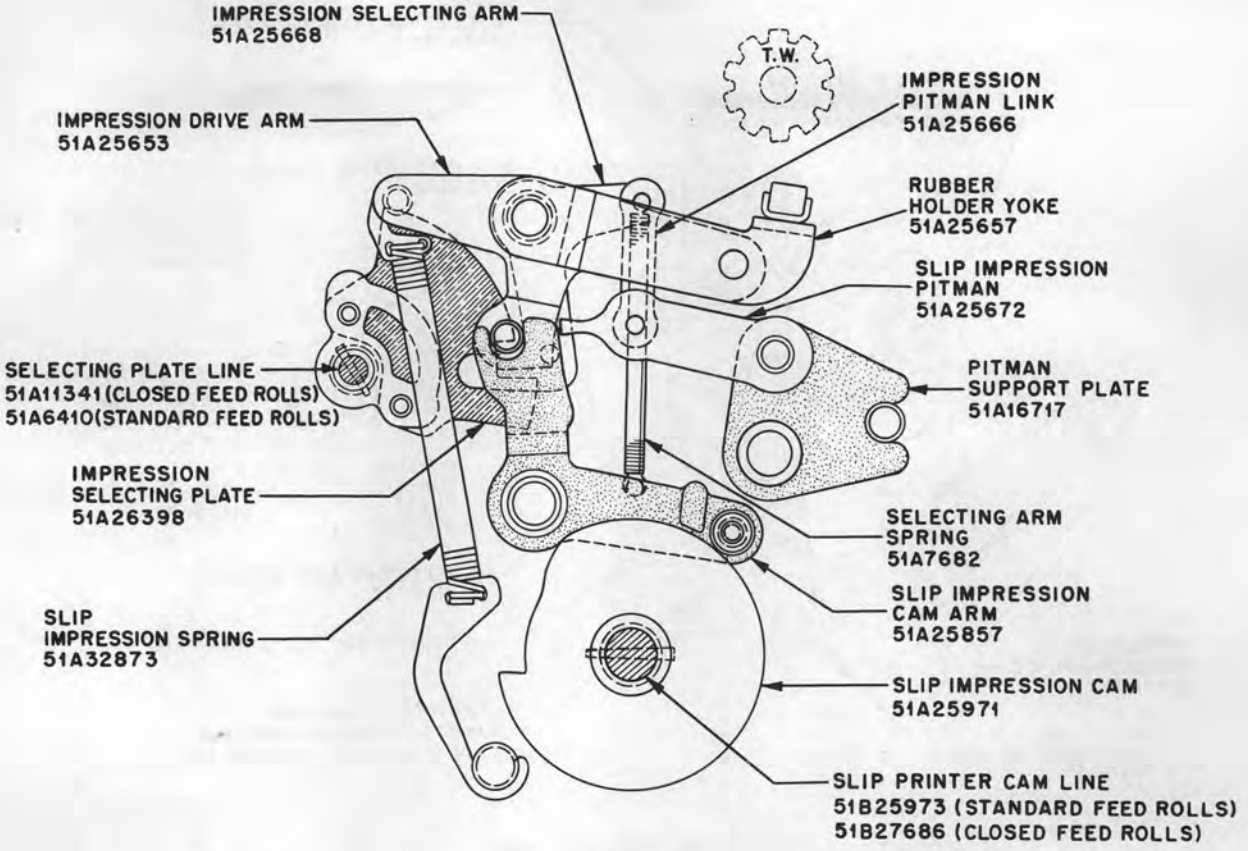
For the purpose of this explanation, Impression Selecting Plate 51A26398 will be used. It has the three different heights of which the high surface will disable all impression; the intermediate height will able only the right or total column impression and the lowest surface will able the left or item column impression.

On an item operation, the Impression Selecting Plate is positioned so as to place the lowest surface of the plate in the path of the stud in the Impression Selecting Arm.

At approximately 1-1/8 turns of the handle, the low surface of the Selection Restoring Cam will come under the roll in the bottom of the Selection Restoring Cam Arm and free it up. At this time, the spring tension on the Impression Selecting Arm will move it top to the front. Since on an item operation the lower surface of the Impression Selecting Plate is in the path of the stud in the Impression Selecting Arm, the arm will receive its full movement top to the front.

The Impression Pitman Link and Slip Impression Pitman will receive their furthest movement down. In this position, the flatted portion of the pitman is below the Impression Drive Arm 51A25653 (left column) and in the path of the lower extension of the Impression Drive Arm 51A25649 (right column).

LEFT IMPRESSION SELECTION
(2 COLUMN BLOW)



Immediately after 1-1/4 turns of the handle, the low portion of the Slip Impression Cam will come under the roll on the Slip Impression Cam Arms. The block on each arm will move down to the surface of the cam.

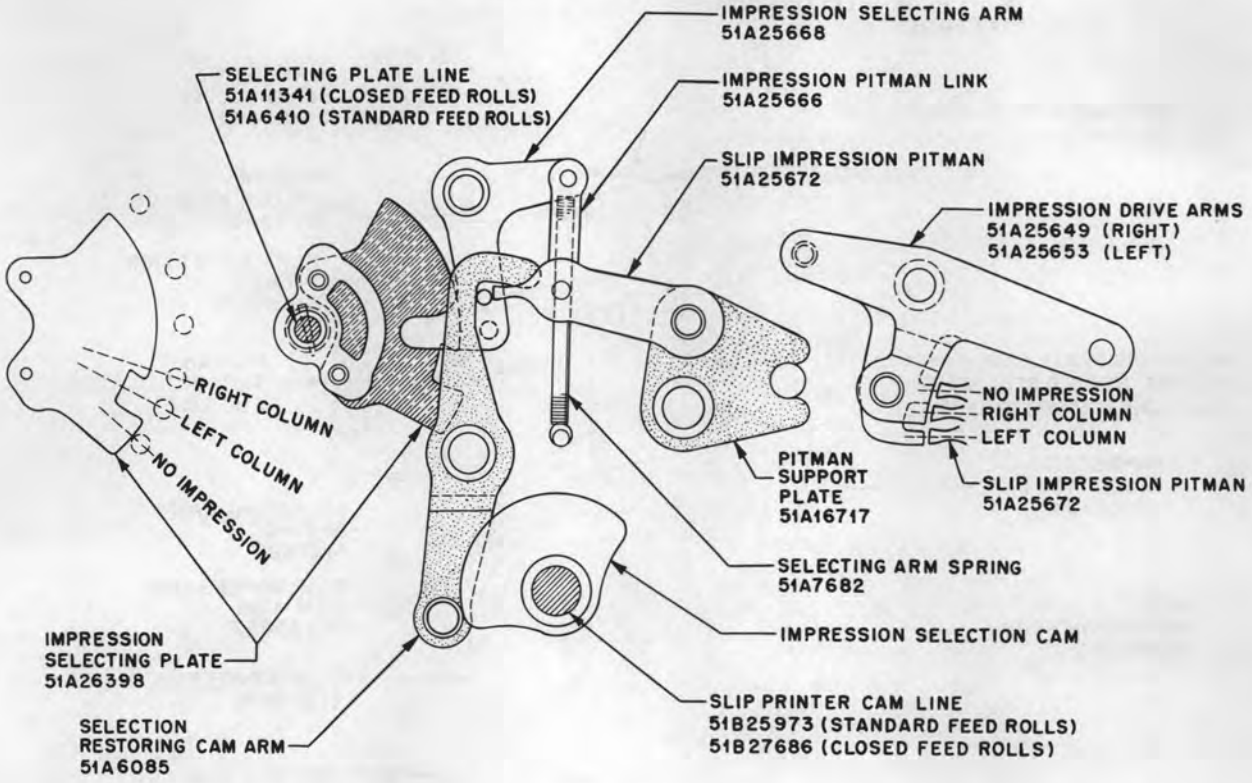
As the cams receive further movement, a sharp fall in the cam will move under the block on the cam arms. The two slip Impression Springs will cause the Impression Drive Arms to move top to the back.

Impression Drive Arm 51A25649 (right column) will move top to the back until the lower extension contacts the flatted surface of the Slip Impression Pitman which will stop it in this position. This will disable the Impression in the right column.

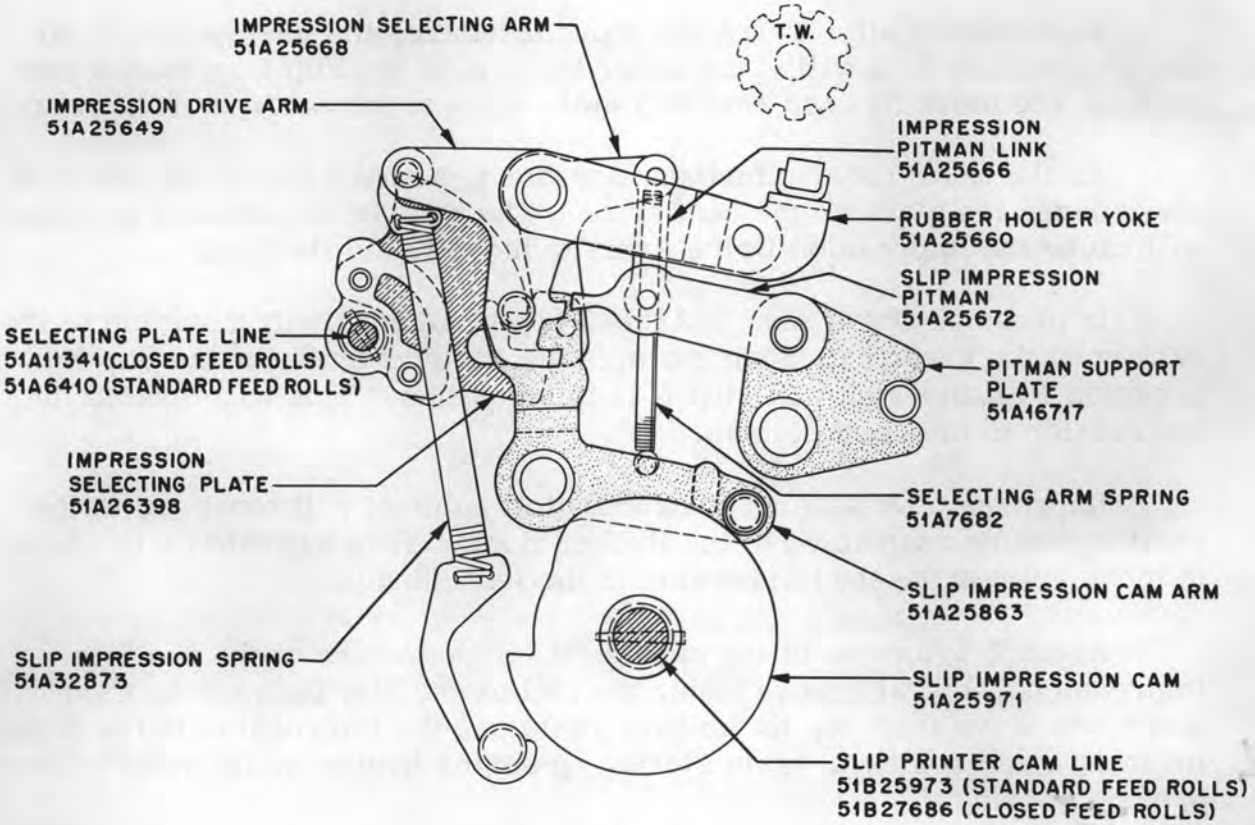
Impression Drive Arm 51A25653 (left column) will move top to the front and being assembled to the Rubber Holder Yoke 51A25657 will cause it to move up to make the impression in the left column.

About 1-5/8 turns of the handle, the high surface of the two Slip Impression Cams will move under the roll on the Slip Impression Cam Arms and move them top to the back restoring the Impression Drive Arms to their home position, again storing up spring tension in the two Slip Impression Springs.

IMPRESSION SELECTION
(2 COLUMN BLOW)



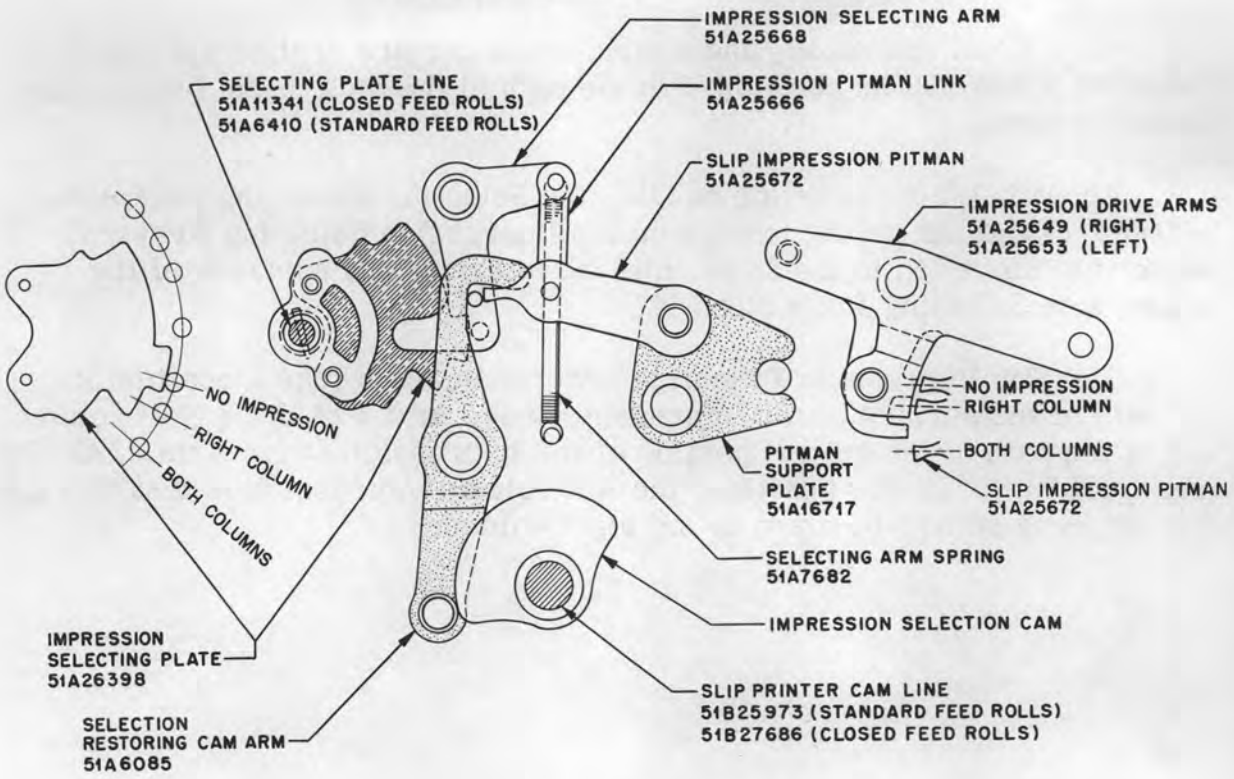
RIGHT IMPRESSION SELECTION
(2 COLUMN BLOW)



On a Total operation, and intermediate surface of the Impression Selecting Plate will be positioned in the path of the stud in the Impression Selecting Arm.

About 1-1/8 turns of the handle, the Selecting Restoring Cam Arm is freed up and the spring tension on the Impression Selecting Arm will cause it to move top to the front until the intermediate surfaces of the impression Selecting Plate stops it.

The Slip Impression Pitman is lowered so as to take a position in the path of the surface of the Impression Drive Arm 51A25653 (left column) and in the path of the cut out portion of the Impression Drive Arm 51A25649, (right column). In this position, the left column impression is disabled and the impression will be made in the right column .



TWO COLUMN BLOW IMPRESSION - C-52 MOTEL MACHINE

On C-52 Motel Machines, the two column Blow Impression Slip Printer is incorporated with the Automatic Line Finder.

On this style printer, Impression Selecting Plate 51A26398 is used. This plate has three different steps that select No Impression, right column or both columns. As can readily be seen, there is an absence of a left column print position. This is due to the fact that on a Balance operation, both left and right Impression is made to print a total along with the date and consecutive number.

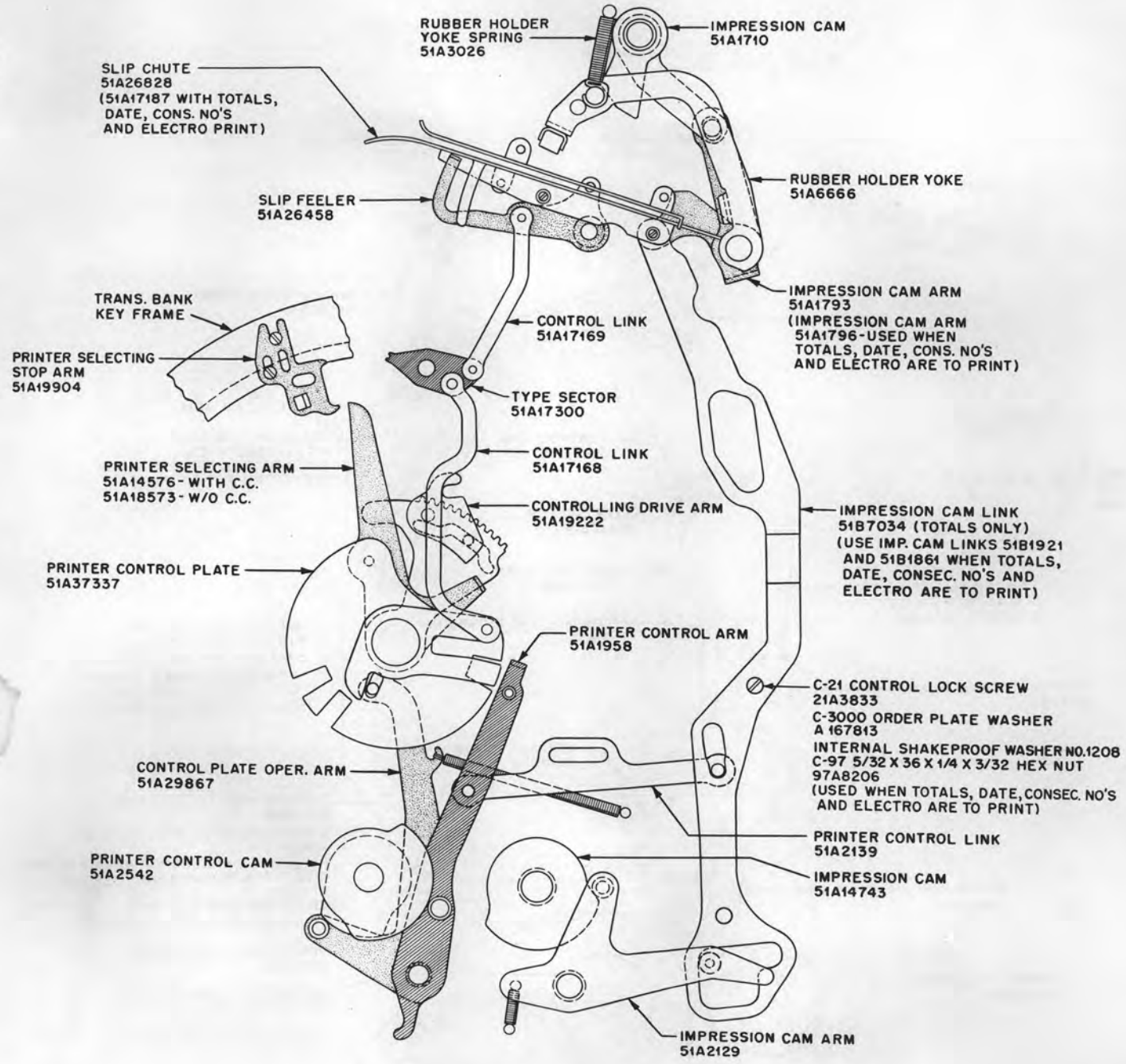
When the Machine is operated on a Balance operation, the lowest surface of the plate is placed in the path of the stud in the Impression Selecting Arm 51A25668.

When the Selection Restoring Cam Arm frees up the Impression Selecting Arm, spring tension on it will move it top to the front its furthest movement top to the front.

Through the Impression Pitman Link the Slip Impression Pitman is lowered below both Impression Drive Arm to allow both the able for impression.

SECTION "S"

RIGHT SIDE SLIP


RUBBER HOLDER YOKE SPRING 51A3026
IMPRESSION CAM 51A1710
SLIP CHUTE 51A26828 (51A17187 WITH TOTALS, DATE, CONS. NO'S AND ELECTRO PRINT)
SLIP FEELER 51A26458
RUBBER HOLDER YOKE 51A6666
IMPRESSION CAM ARM 51A1793 (IMPRESSION CAM ARM 51A1796-USED WHEN TOTALS, DATE, CONS. NO'S AND ELECTRO ARE TO PRINT)
TRANS. BANK KEY FRAME
CONTROL LINK 51A17169
PRINTER SELECTING STOP ARM 51A19904
TYPE SECTOR 51A17300
CONTROL LINK 51A17168
PRINTER SELECTING ARM 51A14576-WITH C.C. 51A18573-W/O C.C.
CONTROLLING DRIVE ARM 51A19222
IMPRESSION CAM LINK 51B7034 (TOTALS ONLY) (USE IMP. CAM LINKS 51B1921 AND 51B1861 WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
PRINTER CONTROL PLATE 51A37337
PRINTER CONTROL ARM 51A1958
C-21 CONTROL LOCK SCREW 21A3833
C-3000 ORDER PLATE WASHER A 167813
INTERNAL SHAKEPROOF WASHER NO.1208
C-97 5/32 X 36 X 1/4 X 3/32 HEX NUT 97A8206
(USED WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
CONTROL PLATE OPER. ARM 51A29867
PRINTER CONTROL LINK 51A2139
PRINTER CONTROL CAM 51A2542
IMPRESSION CAM 51A14743
IMPRESSION CAM ARM 51A2129

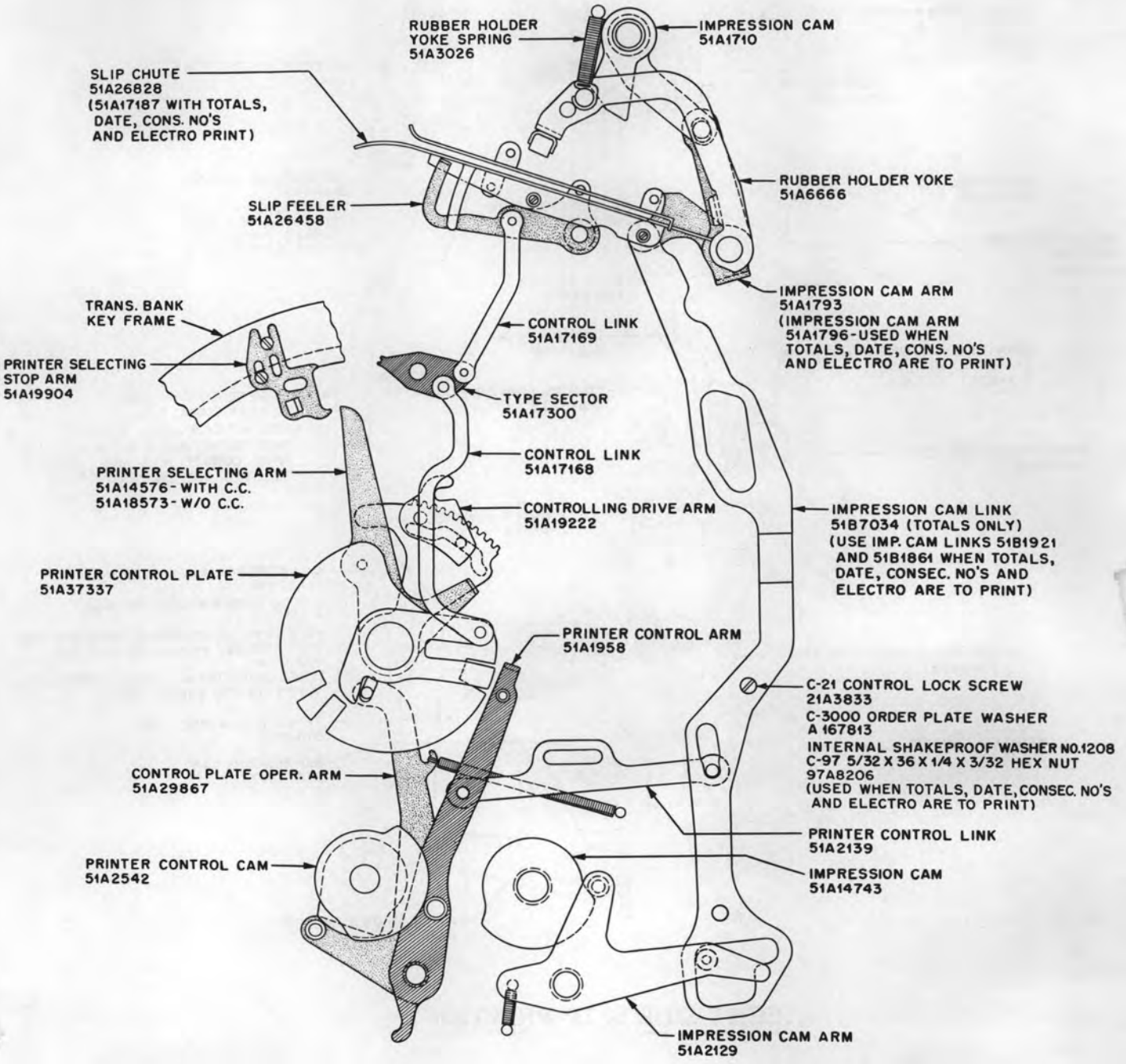
RIGHT SIDE SLIP PRINTER

The Right Side Slip Printer is constructed on the C-52 in place of the Receipt Printer. This style Slip Printer will not inhibit the use of the Detail Printer.

The Right Side Slip Printer can be constructed to print amounts, date, consecutive number, and electro or amounts only.

It can be constructed on machines with a left side slip Printer also and will not alter this printer in any way.

RIGHT SIDE SLIP PRINTER


RUBBER HOLDER YOKE SPRING 51A3026
IMPRESSION CAM 51A1710
SLIP CHUTE 51A26828 (51A17187 WITH TOTALS, DATE, CONS. NO'S AND ELECTRO PRINT)
RUBBER HOLDER YOKE 51A6666
SLIP FEELER 51A26458
IMPRESSION CAM ARM 51A1793 (IMPRESSION CAM ARM 51A1796-USED WHEN TOTALS, DATE, CONS. NO'S AND ELECTRO ARE TO PRINT)
TRANS. BANK KEY FRAME
CONTROL LINK 51A17169
PRINTER SELECTING STOP ARM 51A19904
TYPE SECTOR 51A17300
CONTROL LINK 51A17168
PRINTER SELECTING ARM 51A14576-WITH C.C. 51A18573-W/O C.C.
CONTROLLING DRIVE ARM 51A19222
IMPRESSION CAM LINK 51B7034 (TOTALS ONLY) (USE IMP. CAM LINKS 51B1921 AND 51B1861 WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
PRINTER CONTROL PLATE 51A37337
PRINTER CONTROL ARM 51A1958
C-21 CONTROL LOCK SCREW 21A3833
C-3000 ORDER PLATE WASHER A 167813
INTERNAL SHAKEPROOF WASHER NO.1208 C-97 5/32 X 36 X 1/4 X 3/32 HEX NUT 97A8206 (USED WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
CONTROL PLATE OPER. ARM 51A29867
PRINTER CONTROL LINK 51A2139
PRINTER CONTROL CAM 51A2542
IMPRESSION CAM 51A14743
IMPRESSION CAM ARM 51A2129

Impression Control - Total Operation - Slip Inserted

On a Total Operation, just after 1/8 turn of the handle, the low portion of the Printer Control Cam will move under the roll on the Control Plate Operating Arm. Spring tension on the arm causes it to move top to the back.

The stud in the upper end of the arm moves away from the lower portion of the Control Plate 51A17179. The Slip Feeler Spring 51A27161 will cause the Slip Feeler 51A26458 to move up in the front until it contacts the slip. Through the Control Link 51A17169, the Type Sector 51A 16300 is moved down in front so that the two lines will be printed on the Detail.

At the same time, the Control Link 51A17168 is moved up slightly. The Control Plate 51A17179 is moved top to the front but not far enough to block the forward movement of the Printer Control Arm.

The Printer Selecting Arm is moved down the Transaction key bank until it is stopped by the total key pin in the key that has been depressed. The Printer Control Plate is assembled to the Printer Selecting Arm and is moved top to the front along with the arm.

In the total position, the Printer Control Plate has a low surface in the path of the turned over extension of the Printer Control Arm.

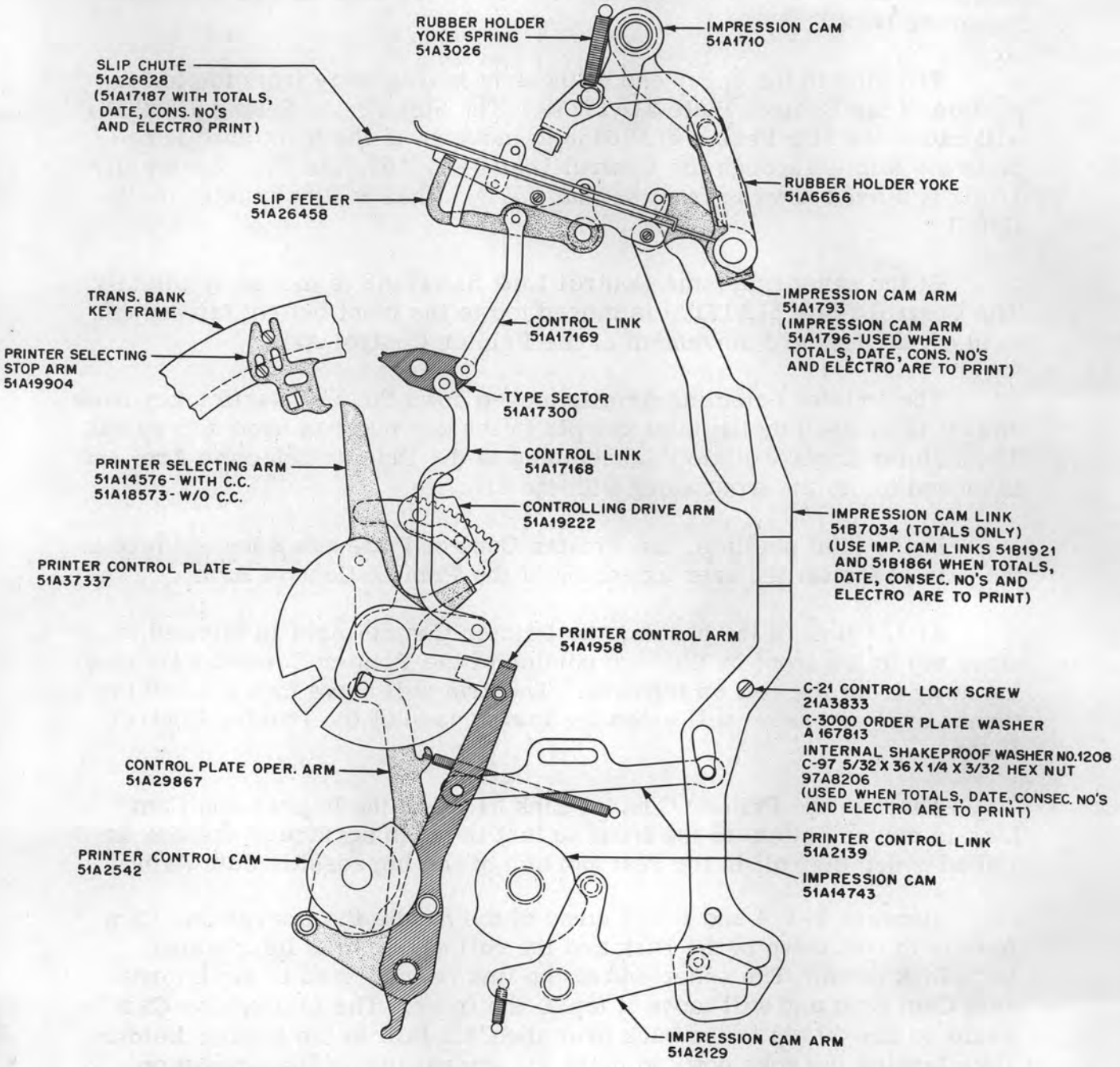
At 1/2 turn of the handle, the Printer Control Arm is allowed to move top to the front by the high portion of the Printer Control Cam moving away from the roll on the arm. The arm will move forward and the turned over extension will enter the low surface of the Printer Control Plate.

Through the Printer Control Link 51A2139 the Impression Cam Link is moved bottom to the front so that the high surface of the link is placed under the roll in the rear portion of the Impression Cam Arm.

Between 1-1/4 and 1-5/8 turns of the handle the Impression Cam Arm is moved down in the back and the roll carries the Impression Cam Link down. The upper end of the link is connected to the Impression Cam Arm and will move it top to the front. The Impression Cam would be moved top to the back over the Cam Roll in the Rubber Holder Yoke forcing the yoke down to make the impression of the amount on the slip.

In the event the Date, Consecutive Numbers and Electro are to print along with the amount on the slip, the Impression Cam Link 51B1921 and the 51B1861 are joined together by a C-21 Control Lock Screw 21A 3833. Therefore, when the amount Impression Cam Link is moved down between 1-1/4 and 1-5/8 the electro Cam Link will be carried down causing the Date, Consecutive Number and Electro to be printed on the slip.

RIGHT SIDE SLIP PRINTER


RUBBER HOLDER YOKE SPRING 51A3026
IMPRESSION CAM 51A1710
SLIP CHUTE 51A26828 (51A17187 WITH TOTALS, DATE, CONS. NO'S AND ELECTRO PRINT)
SLIP FEELER 51A26458
RUBBER HOLDER YOKE 51A6666
IMPRESSION CAM ARM 51A1793 (IMPRESSION CAM ARM 51A1796-USED WHEN TOTALS, DATE, CONS. NO'S AND ELECTRO ARE TO PRINT)
TRANS. BANK KEY FRAME
CONTROL LINK 51A17169
PRINTER SELECTING STOP ARM 51A19904
TYPE SECTOR 51A17300
CONTROL LINK 51A17168
PRINTER SELECTING ARM 51A14576-WITH C.C. 51A18573-W/O C.C.
CONTROLLING DRIVE ARM 51A19222
IMPRESSION CAM LINK 51B7034 (TOTALS ONLY) (USE IMP. CAM LINKS 51B1921 AND 51B1861 WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
PRINTER CONTROL PLATE 51A37337
PRINTER CONTROL ARM 51A1958
C-21 CONTROL LOCK SCREW 21A3833
C-3000 ORDER PLATE WASHER A 167813
INTERNAL SHAKEPROOF WASHER NO.1208 C-97 5/32 X 36 X 1/4 X 3/32 HEX NUT 97A8206 (USED WHEN TOTALS, DATE, CONSEC. NO'S AND ELECTRO ARE TO PRINT)
CONTROL PLATE OPER. ARM 51A29867
PRINTER CONTROL LINK 51A2139
PRINTER CONTROL CAM 51A2542
IMPRESSION CAM 51A14743
IMPRESSION CAM ARM 51A2129

Slightly past 1-5/8 turns of the handle the Printer Control Arm is moved top to the back moving the impression cam link to the back. The high surface of the link is moved away from the roll on the rear end of the Impression Cam Arm.

About 1-7/8 turns of the handle, the Impression Cam Arm is restored. Also, the Control Plate Operating Arm is moved top to the front restoring the Printer Control Plate and Printer Selecting Arm. The stud in the upper end of the Control Plate Operating Arm contacts the lower extension of the Control Plate 51A17179 and moves it top to the back. Through the Control Link 51A17168 the Type Sector 51A17300 is moved up in the front so that the two lines are above the Detail print line.

The Control Link 51A17169 is moved down restoring the Slip Feeler away from the slip storing up tension in the Slip Feeler Spring.

Impression Control - Total Operation - No Slip Inserted

On a total operation without a slip inserted, just after 1/8 under the handle the Control Plate Operating Arm moves top to the back and the stud in the upper end tends to move away from the lower portion of the Control Plate 51A17179. The Slip Feeler Spring 51A27161 causes the Slip Feeler to move all the way up. Through the Control Link 51A 17169 the Type Sector is moved top to the front below the detail print line. Also, the Control Link 51A17178 is moved up moving the Control Plate 51A17179 top to the front following the stud in the Control Plate Operating Arm.

The back extension of the Control Plate 51A17179 is moved up into the path of the Printer Control Arm disabling the impression.

In the event the machine is constructed with a total key in the tenth position of the Transaction key bank, the Printer Selecting Stop Arm is used. This will stop the Printer Selecting Arm in the ninth position of the key bank.

This type of construction is necessary to enable the Slip Feeler to function properly. If the printer selecting arm was stopped by the key pin in the tenth position, the Control Plate Operating Arm would not receive enough movement to enable the Slip Feeler to raise and sense for a slip.

Similarly, when the Unit Lock Lever is moved out of the "Register" position, the Controlling Drive Arm stops the Printer Selecting Arm in the ninth position for the same reason.

SECTION "T"

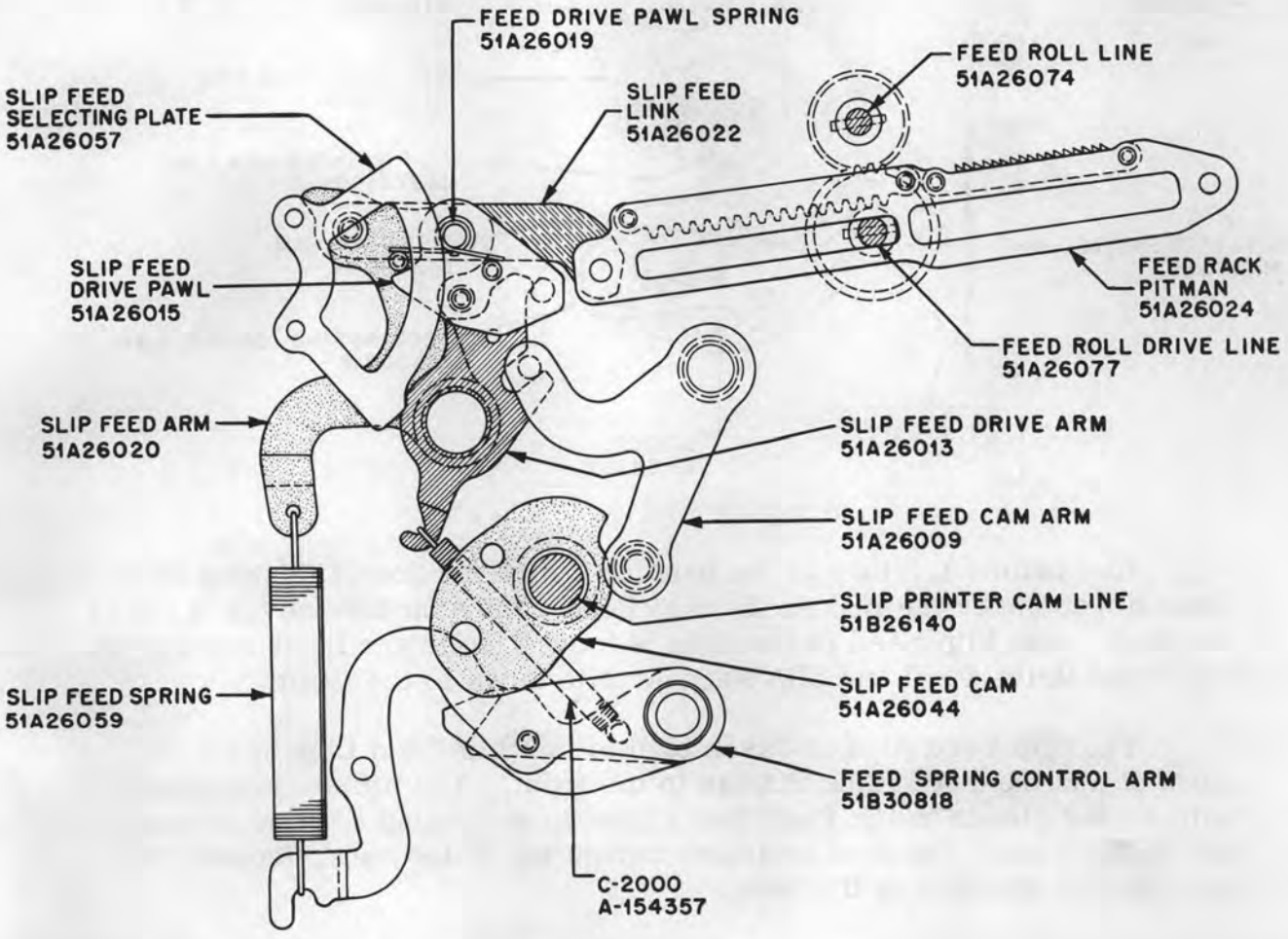
AUTOMATIC LINE FINDER

The Automatic Line Finder device has been designed to eliminate the need of the operator to manually line up the slip with the etched lines on the Slip Table.

Presently it is designed for use only on the Two Column Blow Impression Slip Printer. At a future date it will be incorporated with other type Slip Printers.

The control of the device is from the Transaction Keys and a manual "On and Off" Knob located outside the left side of the Cabinet.

SLIP FEED MECHANISM

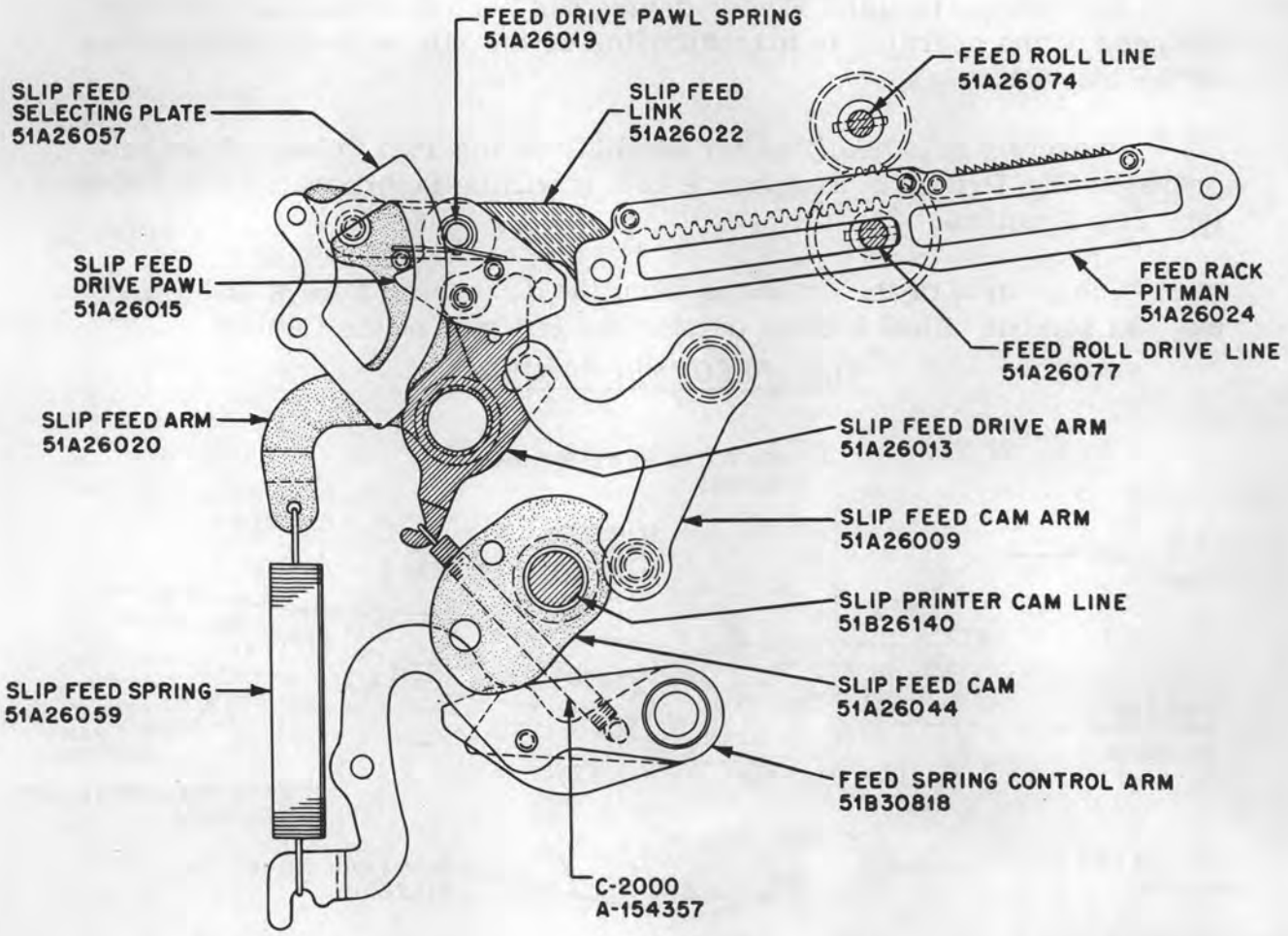


Mechanical Explanation

There is a Selecting Plate located on the Selecting Plate Line that has high and low surfaces on it that determines if the device is to function. This plate is controlled from the Transaction Keys in Row 1 and Row 2.

When a low surface of the Slip Feed Selecting Plate is placed in the path of the stud in the Slip Feed Drive Pawl, the pawl moves top to the front and the half round stud in it is placed in front of the upper portion of the Slip Feed Drive Arm.

SLIP FEED MECHANISM

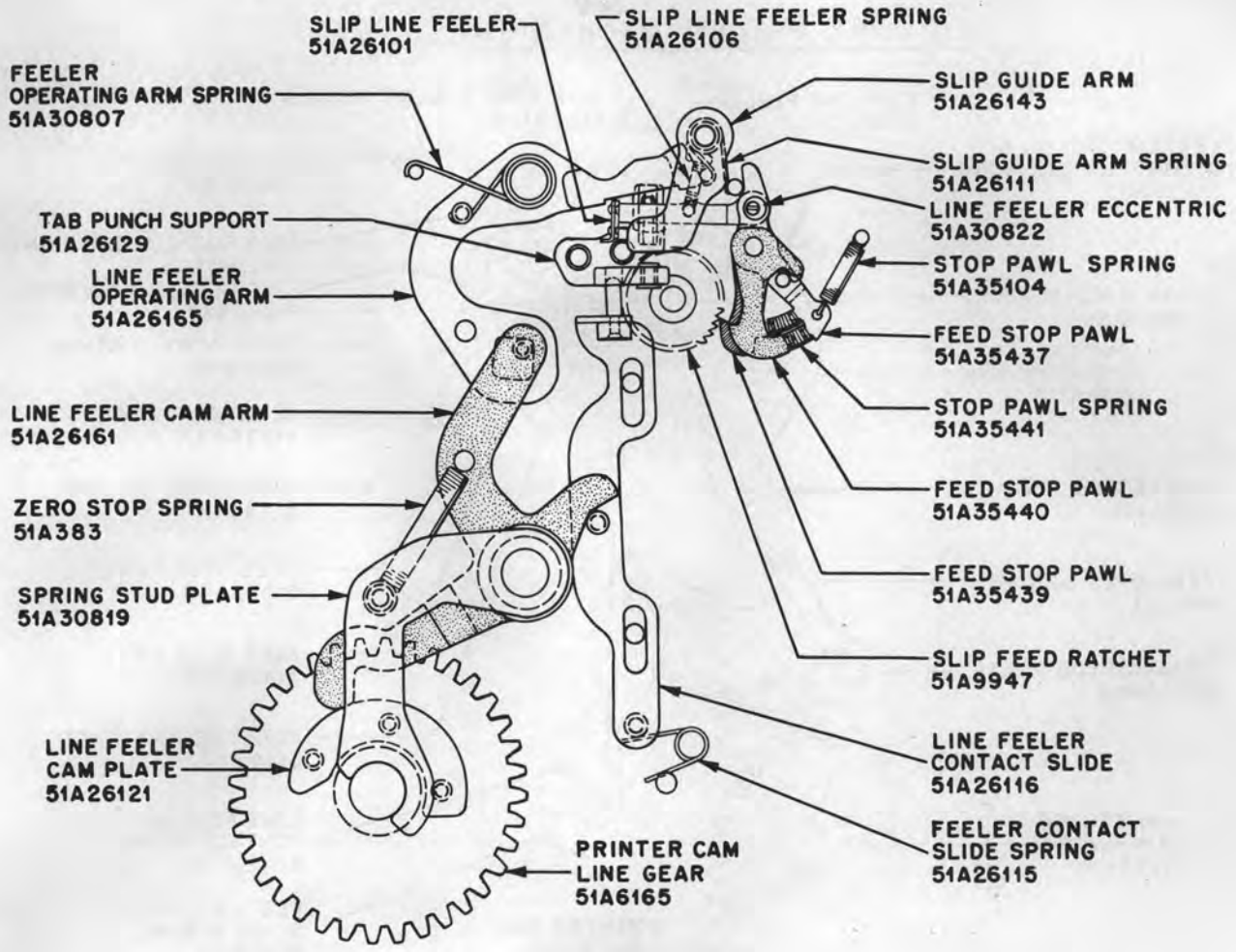


Just before 1/2 turn of the handle, a high portion of the Slip Feed Cam moves under the roll on the Slip Feed Cam Arm and moves it top to the back. The Slip Feed Drive Arm is moved top to the front causing the Slip Feed Drive Pawl and Slip Feed Arm to move to the front.

The Slip Feed Arm is assembled to the Slip Feed Link and will move it and the Feed Rack Pitman to the front. The pitman is meshed with a gear pinned to the Feed Roll Drive Line causing the line to turn top to the front. The feed rolls are moved top to the back, feeding the slip the full distance to the back.

In the home position, the Line Feeler Cam Plate is under the lower portion of the Line Feeler Cam Arm holding it top to the front. This holds the Line Feeler Operating Arm top to the back and the front portion is against the stud in the Slip Guide Arm holding it top to the back. The "foot" of the arm is held down on the slip holding it down against the Slip Table. Also, the Line Feeler Cam Arm being held top to the front, the front portion of it is down on a stud in the Line Feeler Slide holding it down away from the slip.

SLIP LINE FEELER MECHANISM



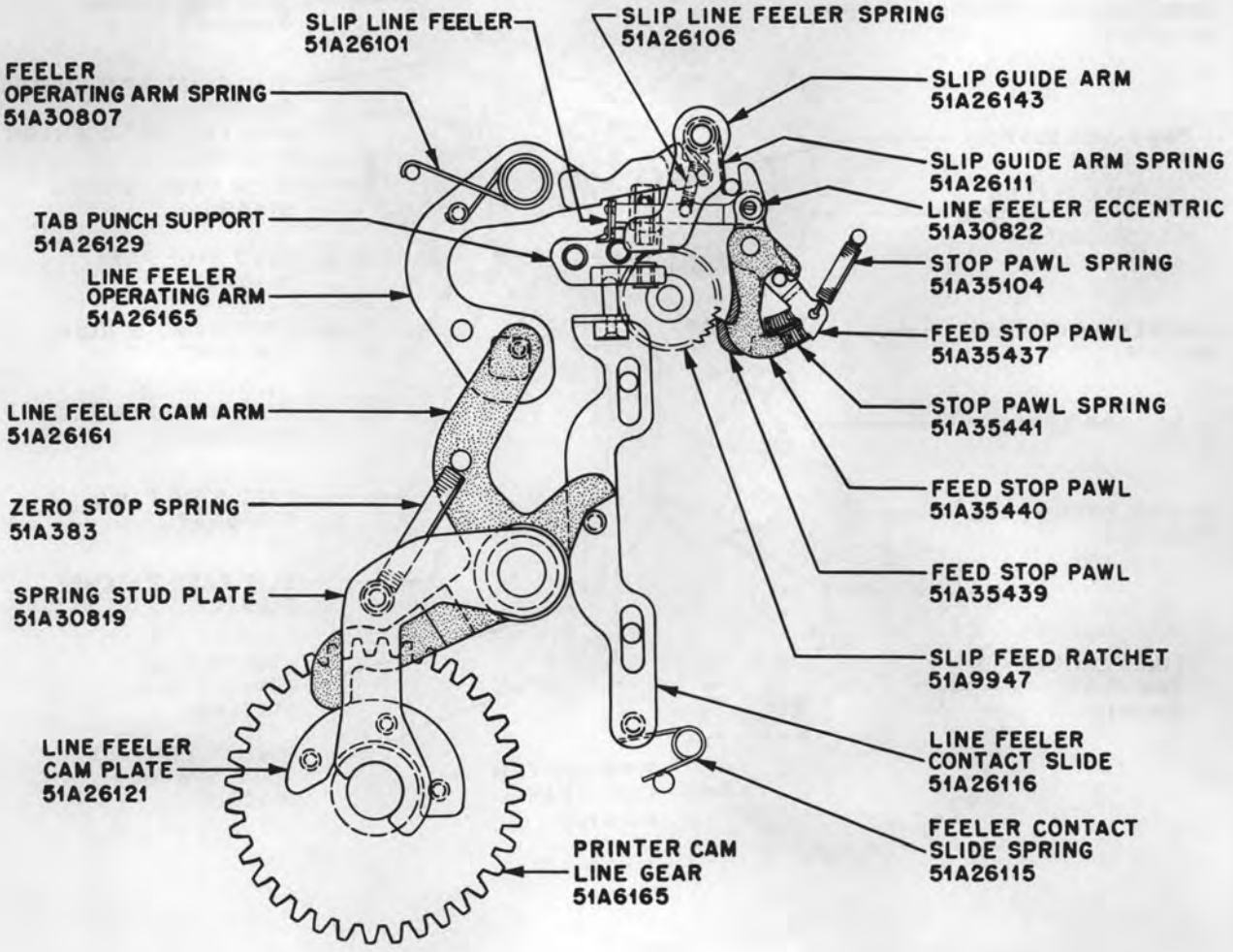
At 3/4 turn of the handle, the Line Feeler Cam Arm rides off the Line Feeler Cam Plate and spring tension on the arm causes it to move top to the back. The front portion of the arm tends to move away from the stud in the Line Feeler Slide but the torsion spring at the bottom of the slide causes it to move up following the Cam Arm.

The upper portion of the Line Feeler Contact Slide move up against the slip. This raises the slip up against the Slip Line Feeler.

At the same time, the Line Feeler Operating Arm is moved top to the front and the front portion moves down on the Slip Line Feeler moving it down against the slip. Also, the Slip Guide Arm is moved top to the front away from the slip by the Slip Guide Arm Spring.

About 7/8 turns of the handle, the low portion of the Slip Feed Cam moves under the roll on the Slip Feed Cam Arm. Spring tension on the Slip Feed Arm causes it to move top to the back. The Slip Feed Link and the Feed Rack Pitman moves to the back turning the Feed Roll Drive Line top to the back. The Feed Rolls are turned top to the front, feeding the slip to the front.

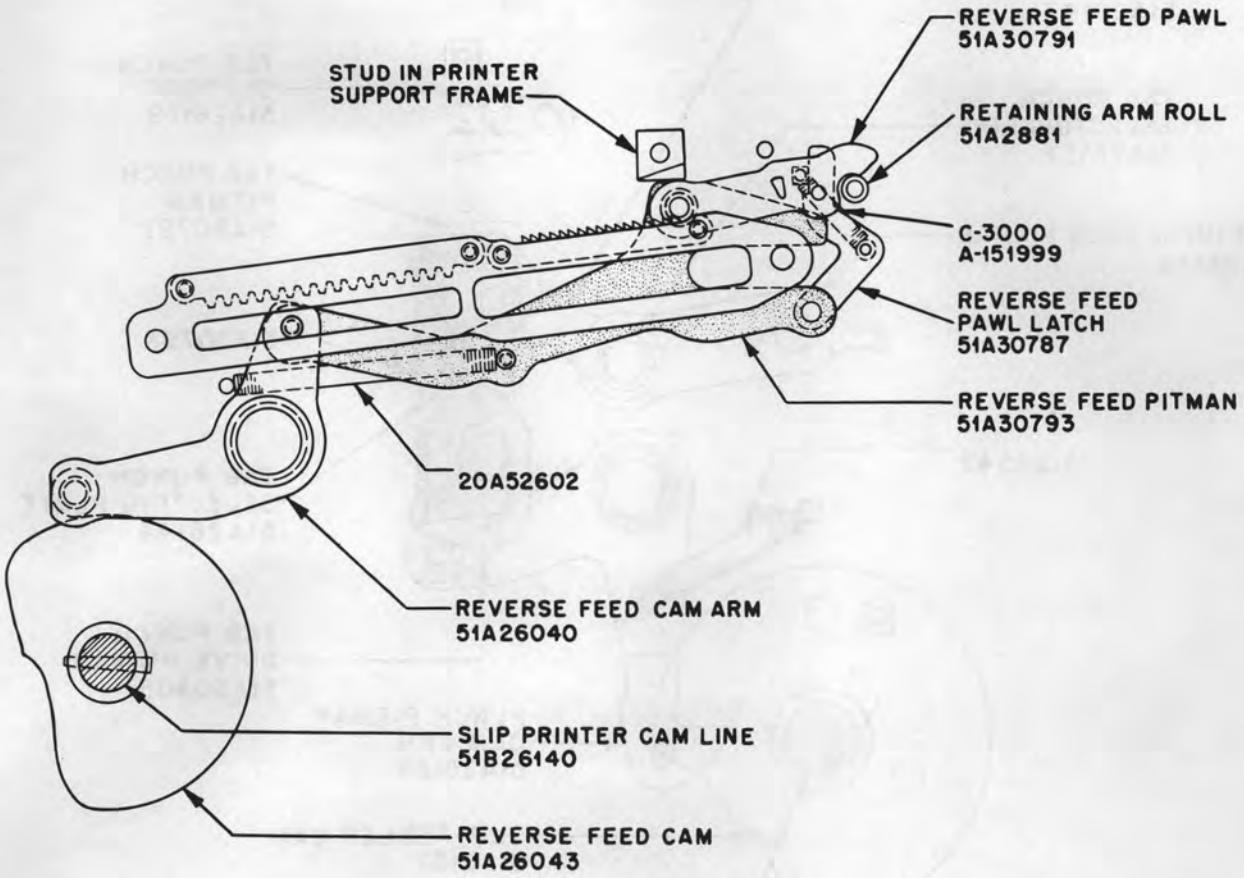
SLIP LINE FEELER MECHANISM



If the impression is to be made on the first line of the slip, the Slip Feed Cam Arm will receive movement until a dwell of the Slip Feed Cam moves under the roll on the arm. This will position the slip so that the first line is directly over the Impression Rubber Hammer.

If the impression is to print on any other line, a tab in the slip will contact the Slip Line Feeler. The feeler will move to the back and the Feed Stop Pawl 51A35437 moves top to the front. Spring tension between this pawl and Feed Stop Pawls 51A35440 and 51A35439 move them into the ratchet which is pinned to the Feed Roll Line, stopping it and the slip.

REVERSE FEED MECHANISM

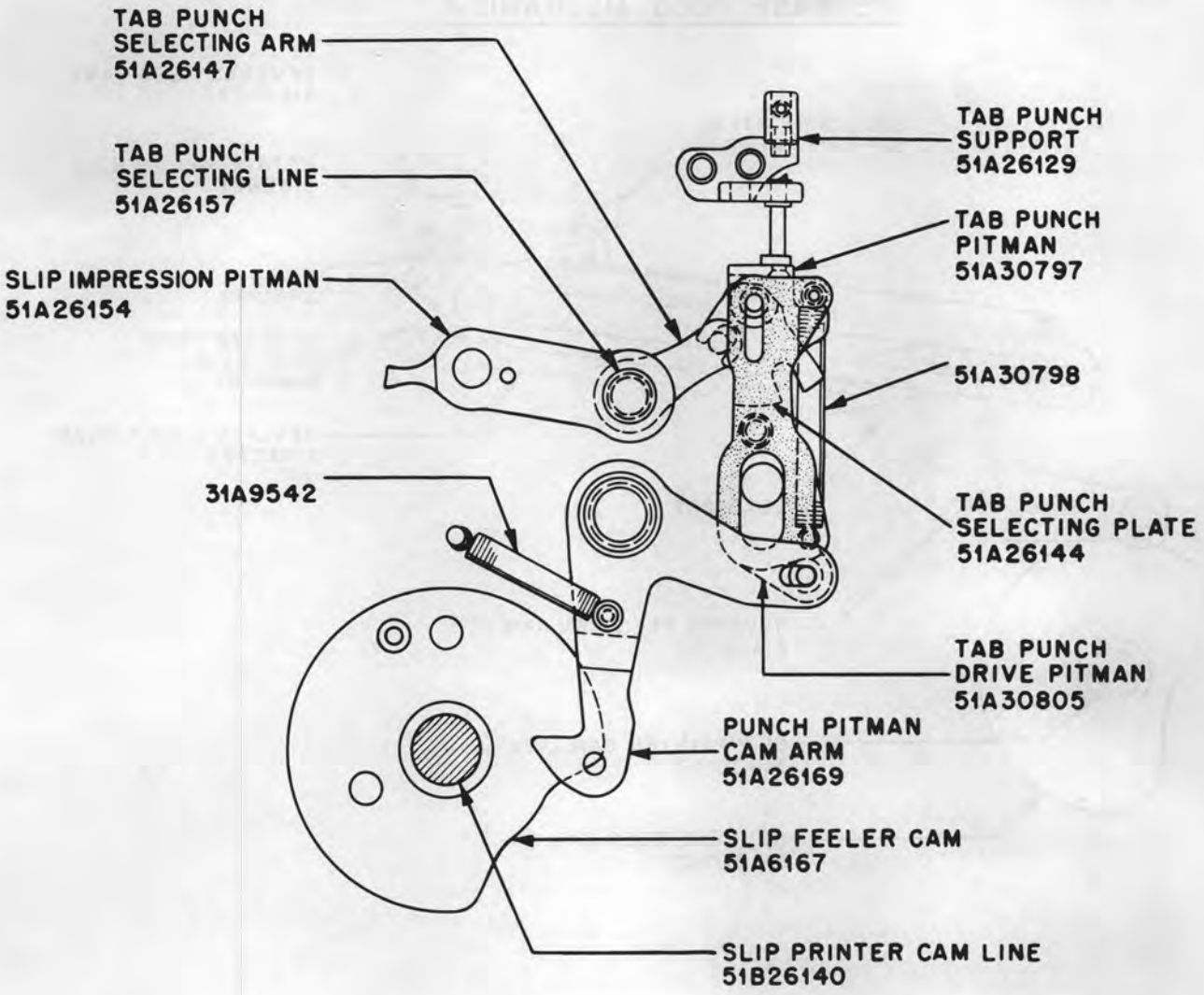


At about 1-1/8 turn of the handle, the low portion of the cam moves under the roll on the Reverse Feed Cam Arm. Spring tension on the Reverse Feed Pitman 51A30793 causes it to move to the back. The Reverse Feed Pawl and Reverse Feed Pawl Latch are assembled to the pitman and are held toward each other spring tension.

As the pitman moves to the back, the Reverse Feed Pawl is pulled off the roll and stud in the Printer Frame. The square stud in it will move down onto the first step of the Reverse Feed Pawl Latch.

As the pitman continues to move to the back, the Reverse Feed Pawl Latch will contact the stud in the printer support plate and stop it. The Reverse Feed Pawl is moved off the step in the latch and the "pie" shaped stud in the pawl moves down into engagement with the ratchet teeth of the Feed Rack Pitman.

TAB PUNCH MECHANISM

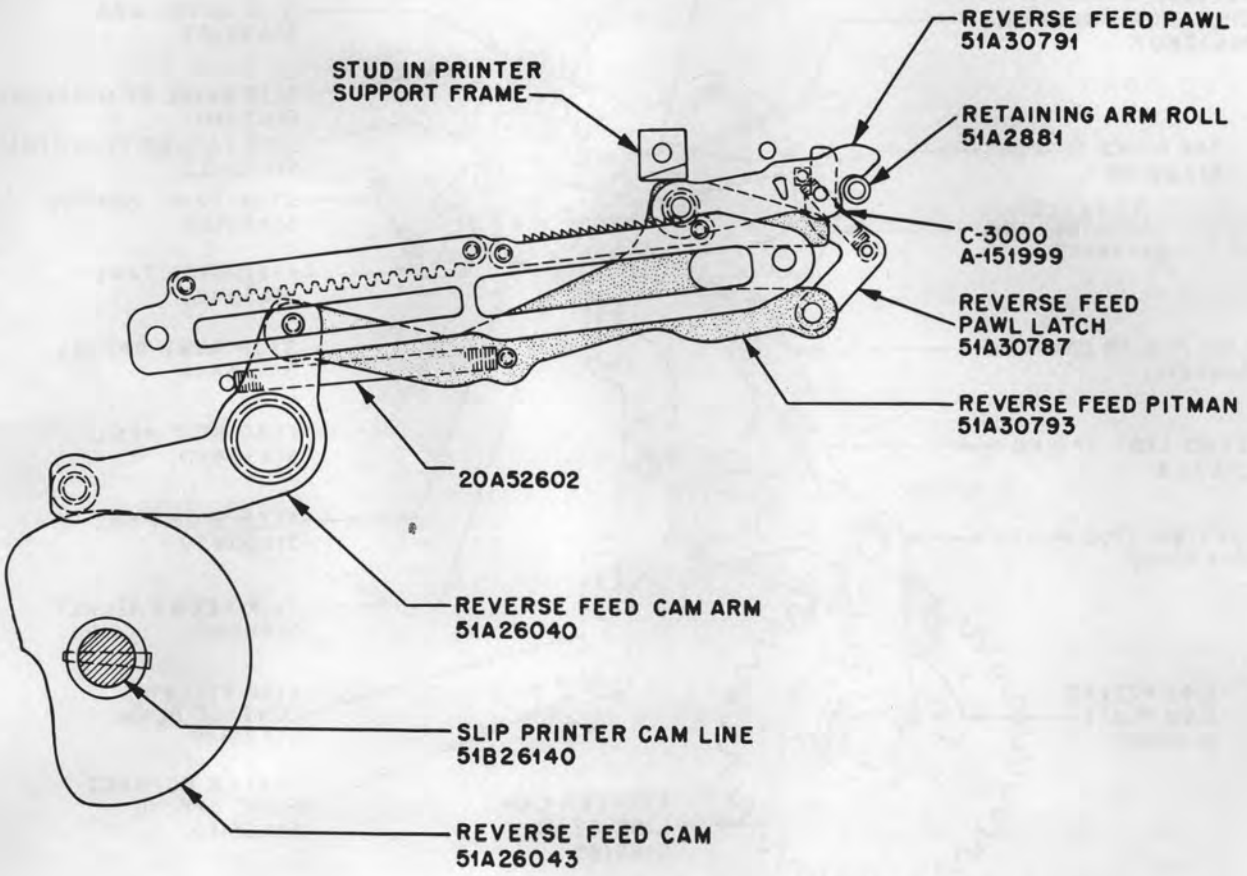

TAB PUNCH SELECTING ARM 51A26147
TAB PUNCH SELECTING LINE 51A26157
SLIP IMPRESSION PITMAN 51A26154
31A9542
TAB PUNCH SUPPORT 51A26129
TAB PUNCH PITMAN 51A30797
51A30798
TAB PUNCH SELECTING PLATE 51A26144
TAB PUNCH DRIVE PITMAN 51A30805
PUNCH PITMAN CAM ARM 51A26169
SLIP FEELER CAM 51A6167
SLIP PRINTER CAM LINE 51B26140

At 1-1/4 turns of the handle, the stud in the left side of the Slip Feeler Cam contacts the Punch Pitman Cam Arm and moves it top to the back. The front of the arm yokes a stud in the Tab Punch Drive Pitman and moves it up. The Tab Punch Pitman has a stud in it that is directly under the Tab Punch Selecting Plate which is assembled on a stud in the right side frame. This selecting plate yokes a stud in the Tab Punch Selecting Arm which is pinned to the Tab Punch Selecting Line. This line is controlled from a Slip Impression Selecting Plate through the Impression Selecting Arm and Slip Impression Pitman. When either or both impression yokes are selecting to make an impression, a low surface of the Tab Punch Selecting Plate is placed over the stud in the Tab Punch Drive Pitman.

When the Tab Punch Drive Pitman is moved up, the stud moves into the low surface of the Tab Punch Selecting Plate. The spring between the Tab Punch Drive Pitman and the Tab Punch Pitman will cause the Tab Punch Pitman to move up punching a tab in the slip.

Slightly past 1-1/4 turn of the handle the impression is made on the slip from either or both of the Impression Rubber Holders.

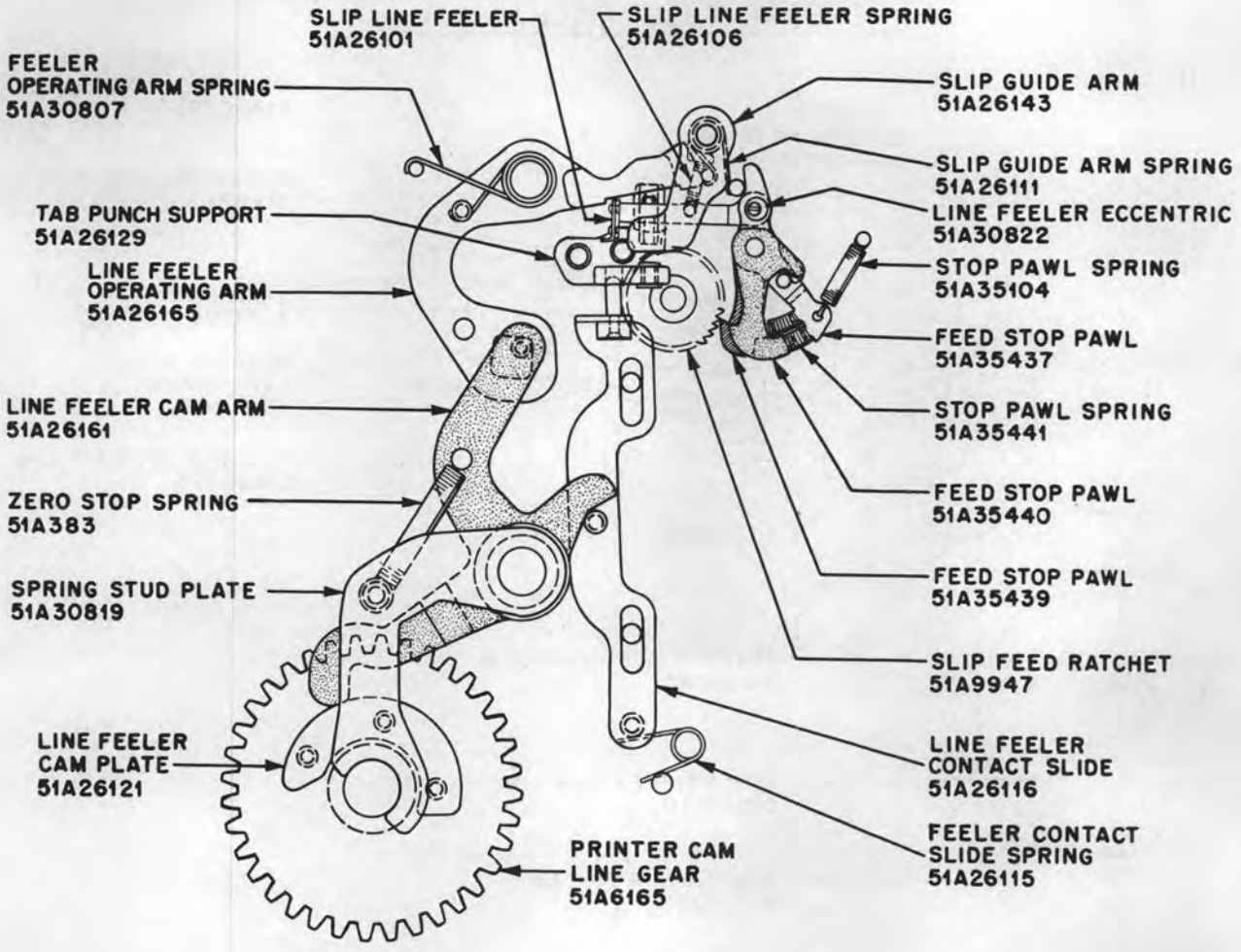
REVERSE FEED MECHANISM



Also, as the stud in the right side of Slip Feeler Cam moves past the "nose" of the Tab Punch Cam Arm, the Tab Punch Drive Pitman, the Tab Punch Pitman and Tab Punch Cam Arm, restore to their "home" position.

Slightly past 1-3/8 turn of the handle, the high surface of the Reverse Feed Cam 51A26040 moves under the roll in the Reverse Feed Cam Arm and moves it top to the front. The Reverse Feed Pitman and Reverse Feed Pawl are moved forward. The "pie" shaped stud in the pawl being in the ratchet teeth of the Feed Rack Pitman will move the pitman to the front. Through the Feed Roll Drive Line the feed rolls feed the slip to the back slightly.

SLIP LINE FEELER MECHANISM



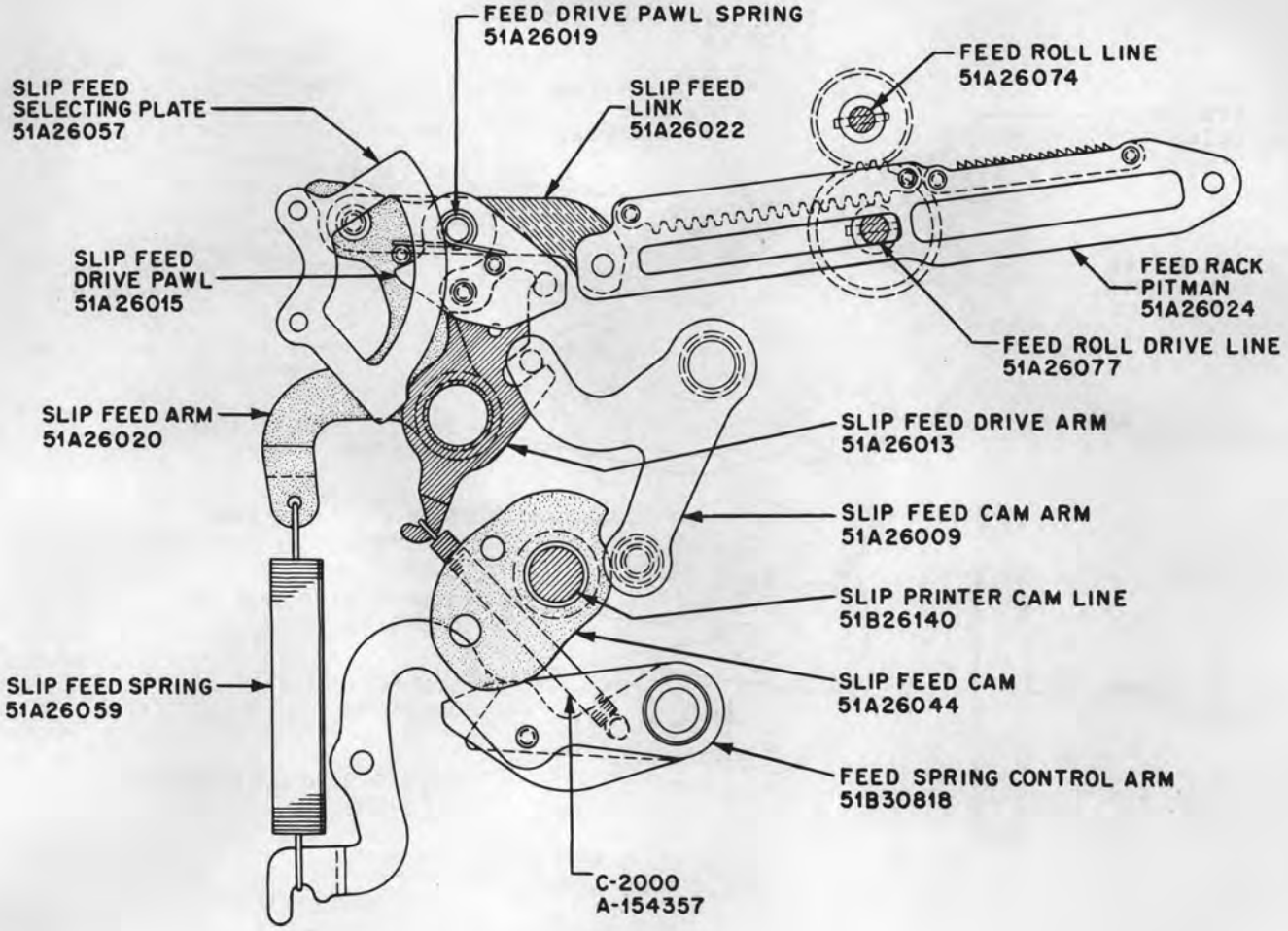
This moves the tab in the slip away from the turned over portion of the Slip Line Feeler. The Feed Stop Pawl 51A35437 is moved top to the back and the Feed Stop Pawl 51A35439 and 51A35440 are moved out of the teeth of the ratchet pinned to the Feed Roll Drive Line.

At 1-1/2 turns of the handle, the Line Feeler Cam Plate assembled on Printer Cam Line Gear moves under the Line Feeler Cam Arm and moves it top to the front.

The front extension of the Cam Arm moves down on the stud in the Line Feeler Contact Slide moving the slide down away from the Slip.

Also, the torsion spring on the Line Feeler Operating Arm hold it top to the front until the Line Feeler Cam Plate moves the Line Feeler Cam Arm top to the front. At this time the stud in the upper end of it contacts and moves the Line Feeler Operating Arm Top to the back. Spring Tension on the feeler moves it up above the tabs on the slip. The Slip Guide Arm moves back down on the slip.

SLIP FEED MECHANISM



About 1-5/8 turn of the handle, the Reverse Feed Pawl contacts the roll on the Printer Support Plate and causes the pawl to move up in the front. The Reverse Feed Pawl Latch will move top to the back so that the step of the latch is under the square stud in the Reverse Feed Pawl. The "pie" shaped stud in the pawl moves out of engagement with the ratchet teeth in the Feed Rack Pitman.

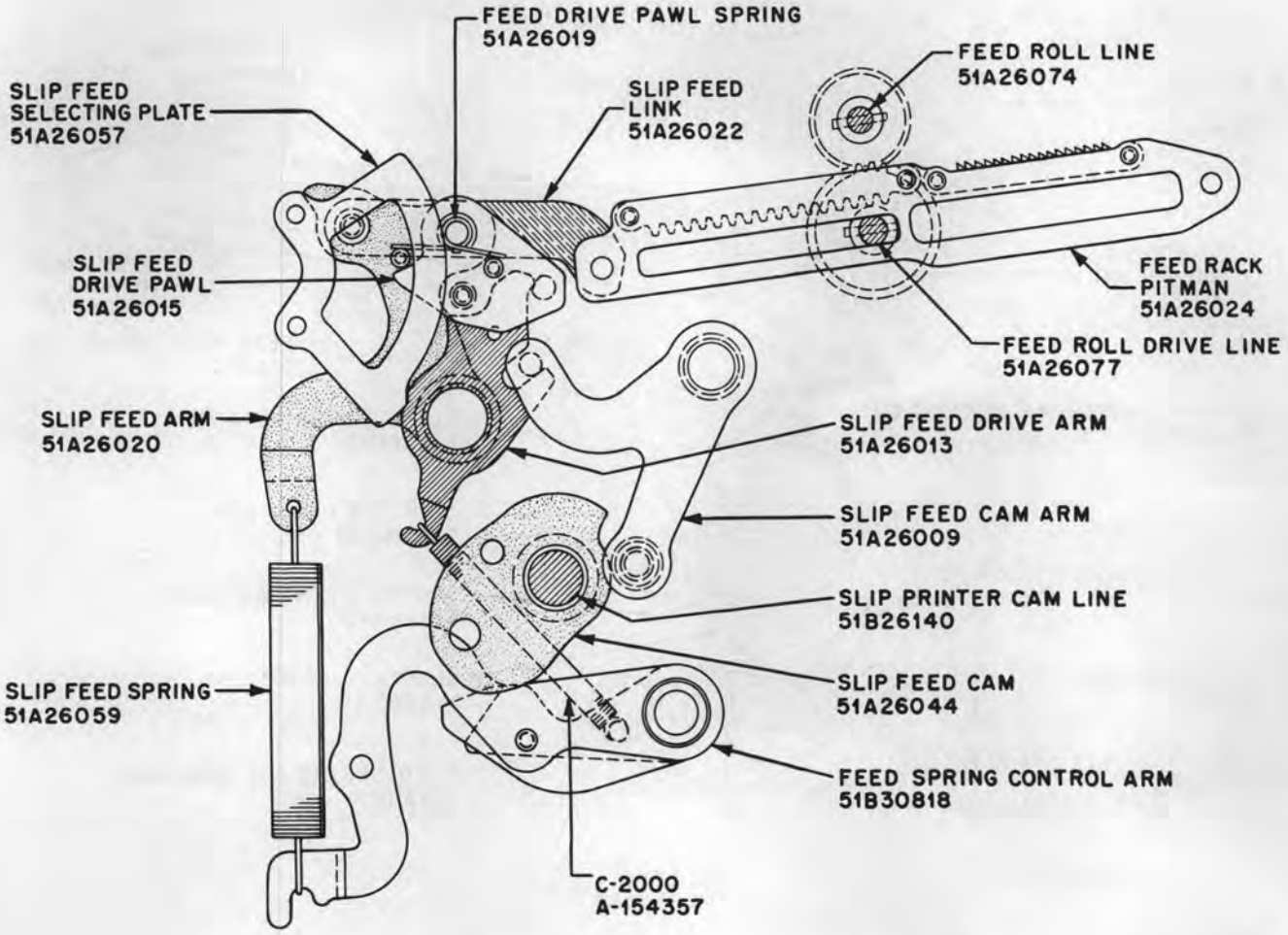
Slightly past 1-5/8 turns of the handle, the low surface of the Slip Feed Cam moves under the roll in the Slip Feed Cam Arm. The Slip Feed Spring 51A26059 will move the Slip Feed Arm top to the back. The Slip Feed Link and Feed Rack Pitman will move to the back feeding the slip out to the Slip Stop on the Slip Table.

Feed Spring Control Arm

The function of the Feed Spring Control Arm is to equalize the spring tension on the Slip Feed Arm regardless of the position of the Feed Rack Pitman.

The first movement of this arm is between 1/4 and 5/8 turns of the handle. At that time, the Feed Spring Control Arm moves up. This movement is to prevent the stretching of the Slip Feed Spring when the slip is fed to the back on its initial feed, since this is a positive movement.

SLIP FEED MECHANISM



From slightly past 3/4 to 1-1/4 turn of the handle, the arm is moved down to increase the spring tension as the slip is fed to the front when the Slip Line Feeler is "sensing".

Immediately after 1-1/4 turn of the handle, the arm is again moved up to decrease the spring tension on the Slip Feed Arm. It is at this time that the "pi e" shaped stud on the Reverse Feed Pawl is moving the Feed Rack Pitman to the front against the spring tension on the Slip Feed Arm to free up the Slip Line Feeler.

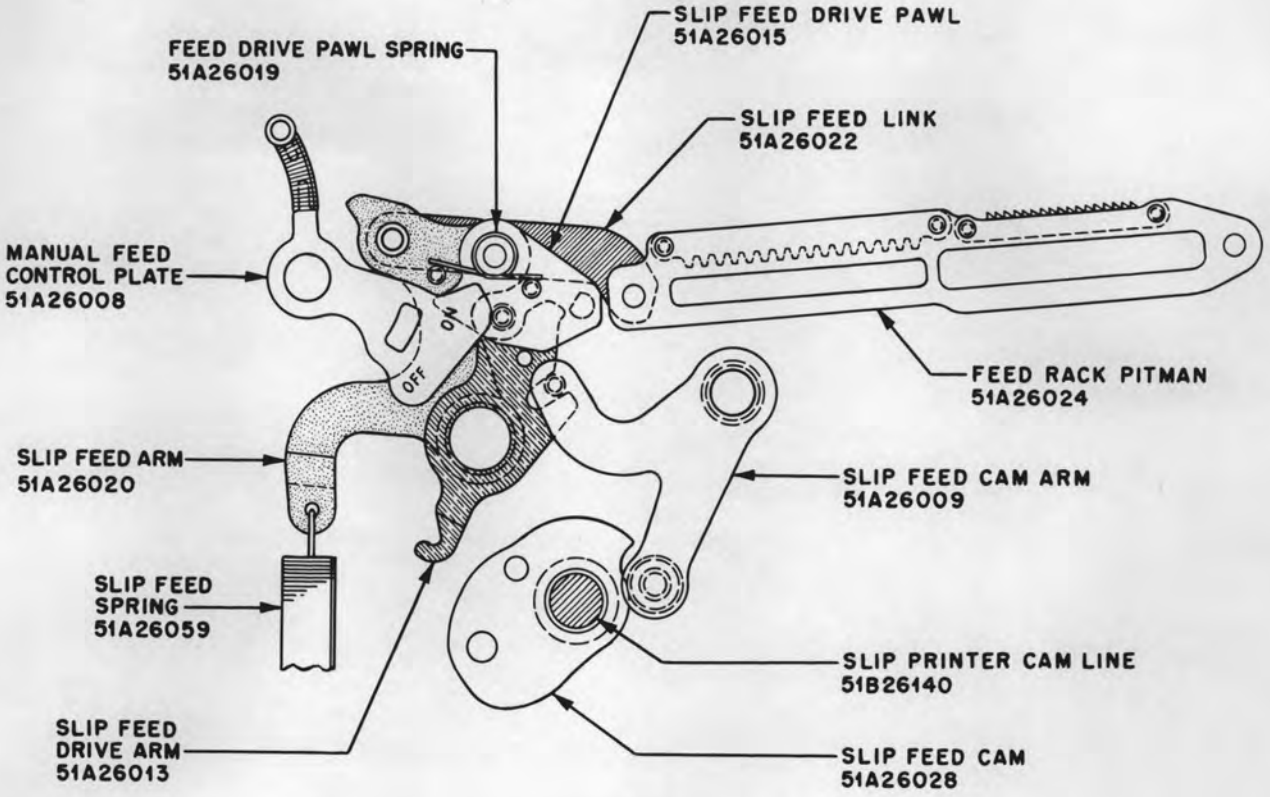
Slightly past 1-5/8 turn of the handle, the Feed Spring Control Arm is again moved down to increase spring tension on the Slip Feed Arm, which is feeding the slip out to the Slip Stop on the Slip Table.

Disabling Slip Feed

There are two means to disable the feeding of the slip on the Automatic Line Finder. These are the Slip Feed Control Plate pinned to the Selecting Plate Line, and controlled from the Transaction Keys, and the Manual Feed Control Plate which is operated manually.

The Slip Feed Selecting Plate has high and low surfaces on it that work with the roll on the Slip Feed Drive Pawl. With the low surface behind the roll, the Slip Feed Drive Pawl is down in the abled position.

SLIP FEED DISABLED
"ON AND OFF" KNOB

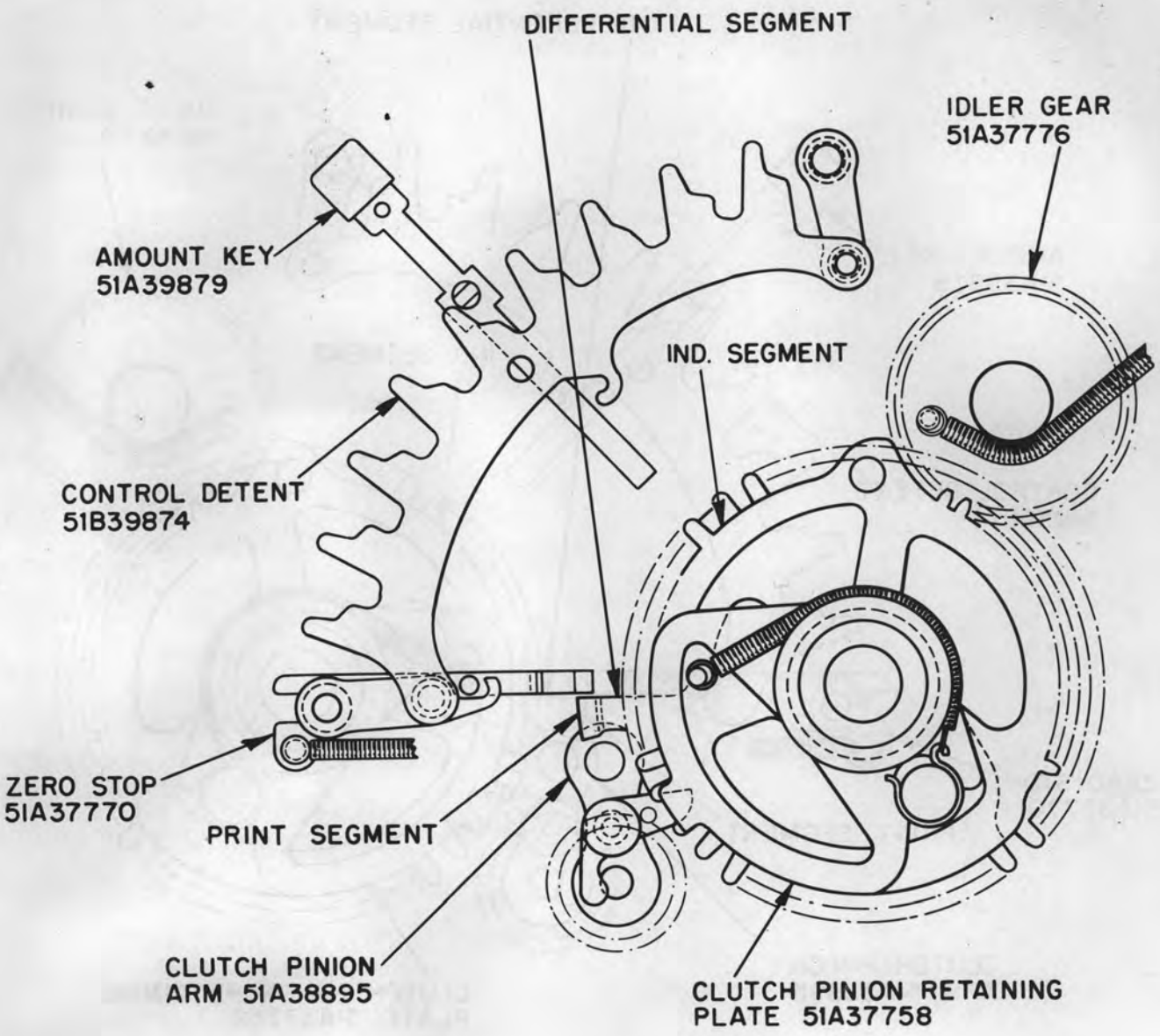


When a high surface is moved up against the roll, the Slip Feed Drive Pawl is moved top to the back and the half round stud in it is positioned above the Slip Feed Drive Arm. Therefore, when the Slip Feed Cam Arm is moved top to the back by the Slip Feed Cam, the Slip Feed Drive Arm moved under the half round stud in the Slip Feed Drive Pawl and no movement is given the Slip Feed Arm to feed the slip.

Similarly, when the Manual Feed Control Plate is moved to the "off" position, a high surface of the plate will move the roll in the Slip Feed Drive Arm top to the back, disabling the feed of the slip.

ADD UNDER

SECTION "U"



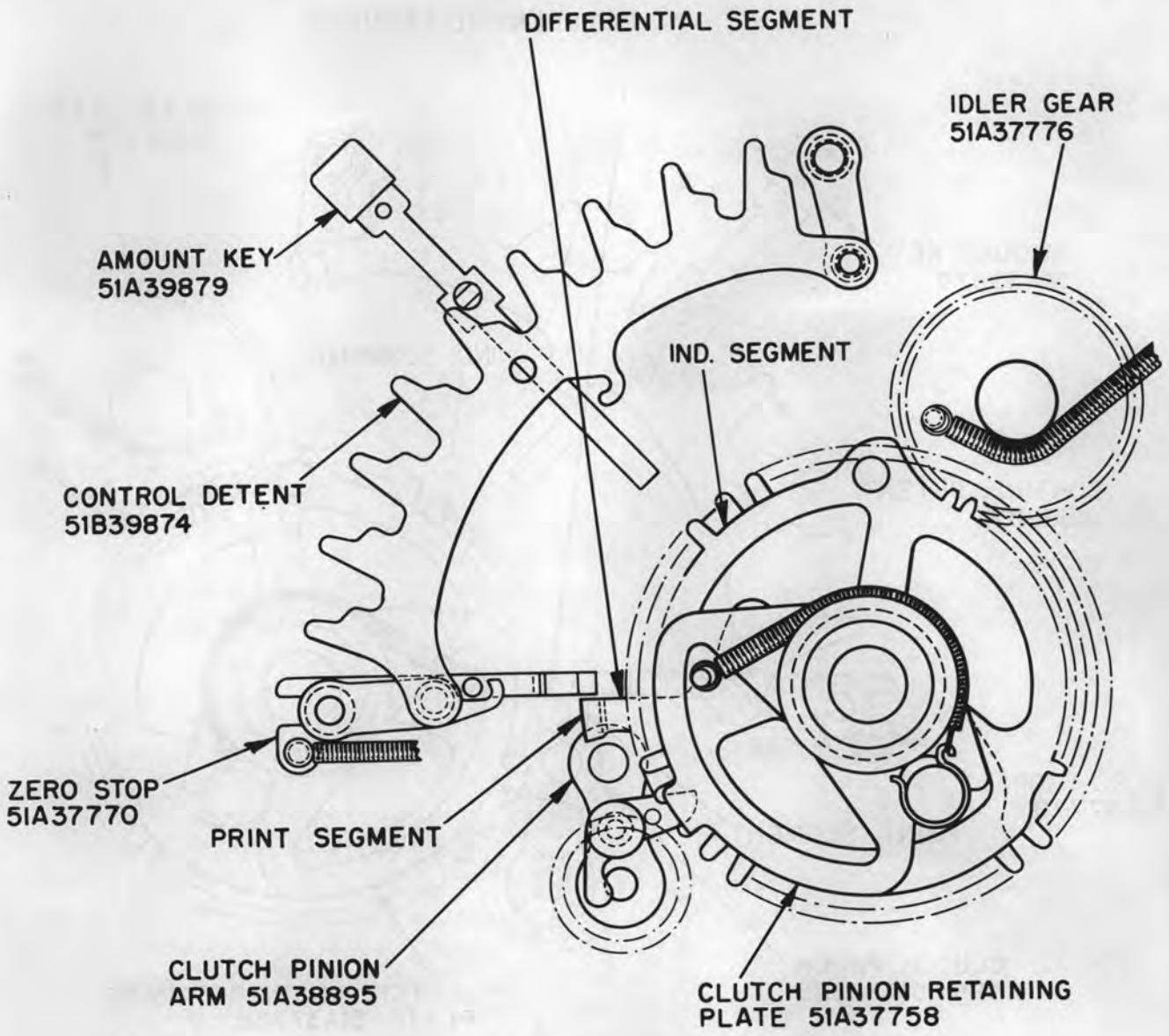
ADD UNDER

A new style Add Under differential has been designed for the C-52. All C-52 being built will have either Row 10 Add Under construction or Rows 7, 8, 9 and 10.

In the event the machine is to be constructed with only one row of Add Under, only Row 10 will be so constructed. If there is to be 2 or more rows of Add Under keybanks Rows 7, 8, 9 and 10 will be constructed Add Under.

This new style Add Under differential is very flexible. By installing a special constructed Amount Bank, the Add Under is changed to a regular amount row.

With this style Add Under differential, the accumulating capacity of the Upper Counter is 7 wheel accumulation.



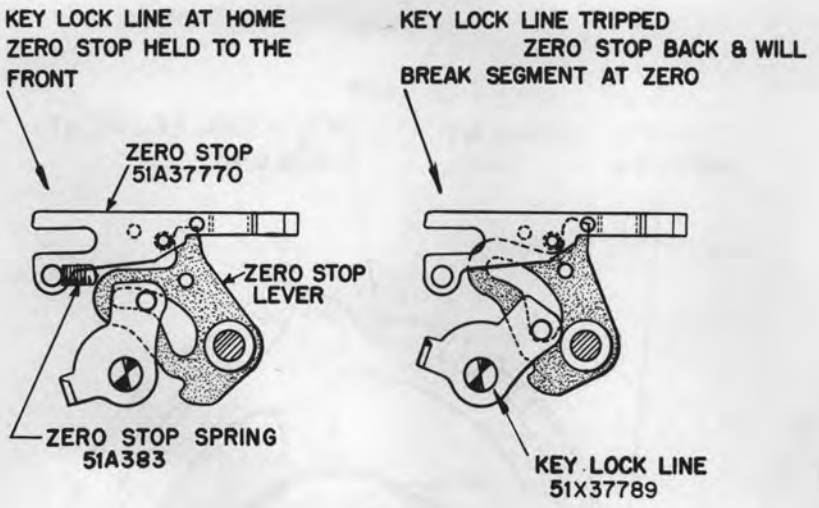
Item Operation-Print Key Depressed

When a print key in one of the Add Under Rows is depressed prior to itemizing, the keypin cams the Control Detent down the bank. The Control Detent Arm is moved top to the back and the "hooked" portion is moved below the path of the stud in the Zero Stop.

When the machine is tripped and the Key Release Arm is moved top to the back, the stud in it moves into the wide part of the raceway of the Zero Stop Lever. Spring tension on the Zero Stop will move the over turned portion all the way to the back over the Differential Segment.

The Differential and Print Segments in the Add Under Rows are cut out in the portion that is meshed with the Clutch Pinion when these segments are in their zero position. Therefore when the machine is "home", the Clutch Pinions in the "Add Under" Rows are meshed with only the Indicator Segments in these rows.

From "home" to 1/8 T.O.H., the Clutch Pinions are moved out of mesh with the Indicator Segments and are meshed with their liners.

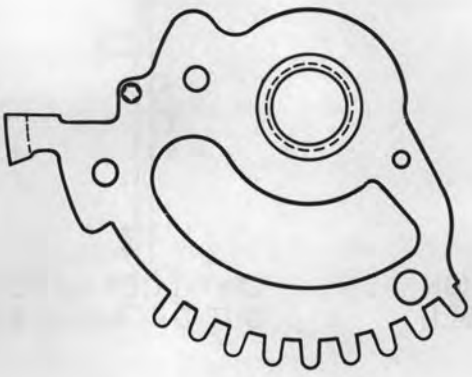


From 1/8 to 3/8 T.O.H. the Differential Bail Shaft moves up in the front. Spring tension on the Idler Gear will cause the Indicator Segment to follow. Also, the Differential Segment Spring will cause the Print Segment to follow up until it is stopped by the Key that has been depressed.

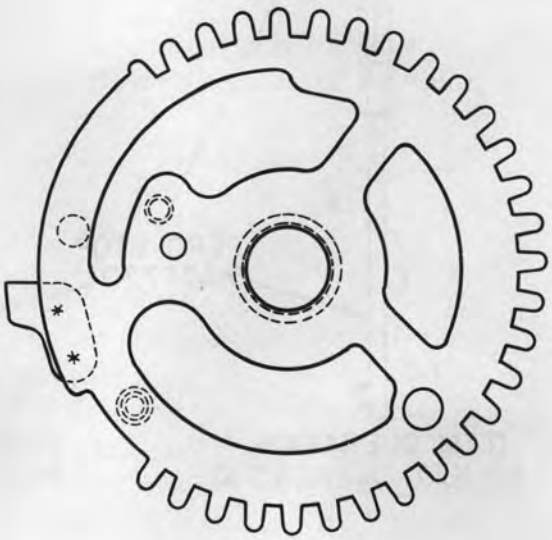
The Indicator Segments moves all the way up the bank to move the Type Wheel through the Transmission to the zero position.

The Differential Segment (Co. Segment) is held in the zero position by the Zero Stop. The Indicator Segment being bonded to the Print Segment by the Clutch Pinion will move down the bank the number of positions the Print Segment was allowed to move up to the key pressed. This will place the corresponding character on the type wheel to the print line.

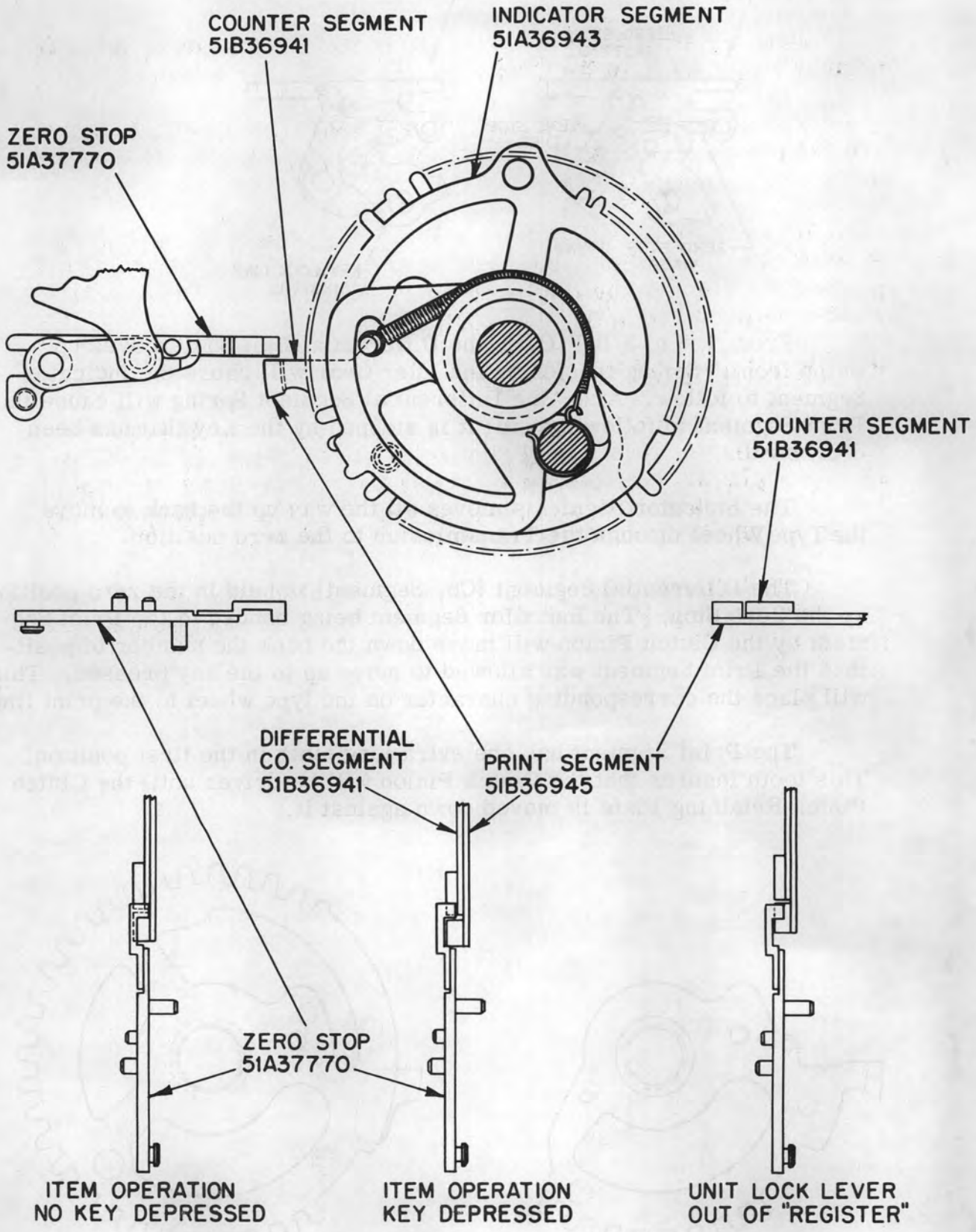
The Print Segment has one extra long tooth in the first position. This tooth insures that the Clutch Pinion will be driven until the Clutch Pinion Retaining Plate is moved down against it.



PRINT SEGMENT
51B36945



DIFFERENTIAL SEGMENT
(COUNTER SEGMENT)
51B36941


COUNTER SEGMENT
51B36941
INDICATOR SEGMENT
51A36943
ZERO STOP
51A37770
COUNTER SEGMENT
51B36941
DIFFERENTIAL
CO. SEGMENT
51B36941
PRINT SEGMENT
51B36945
ZERO STOP
51A37770
ITEM OPERATION
NO KEY DEPRESSED
ITEM OPERATION
KEY DEPRESSED
UNIT LOCK LEVER
OUT OF "REGISTER"

Since the Print Segment is cut out in the home position, there is another means to drive the Clutch Pinions to the zero position.

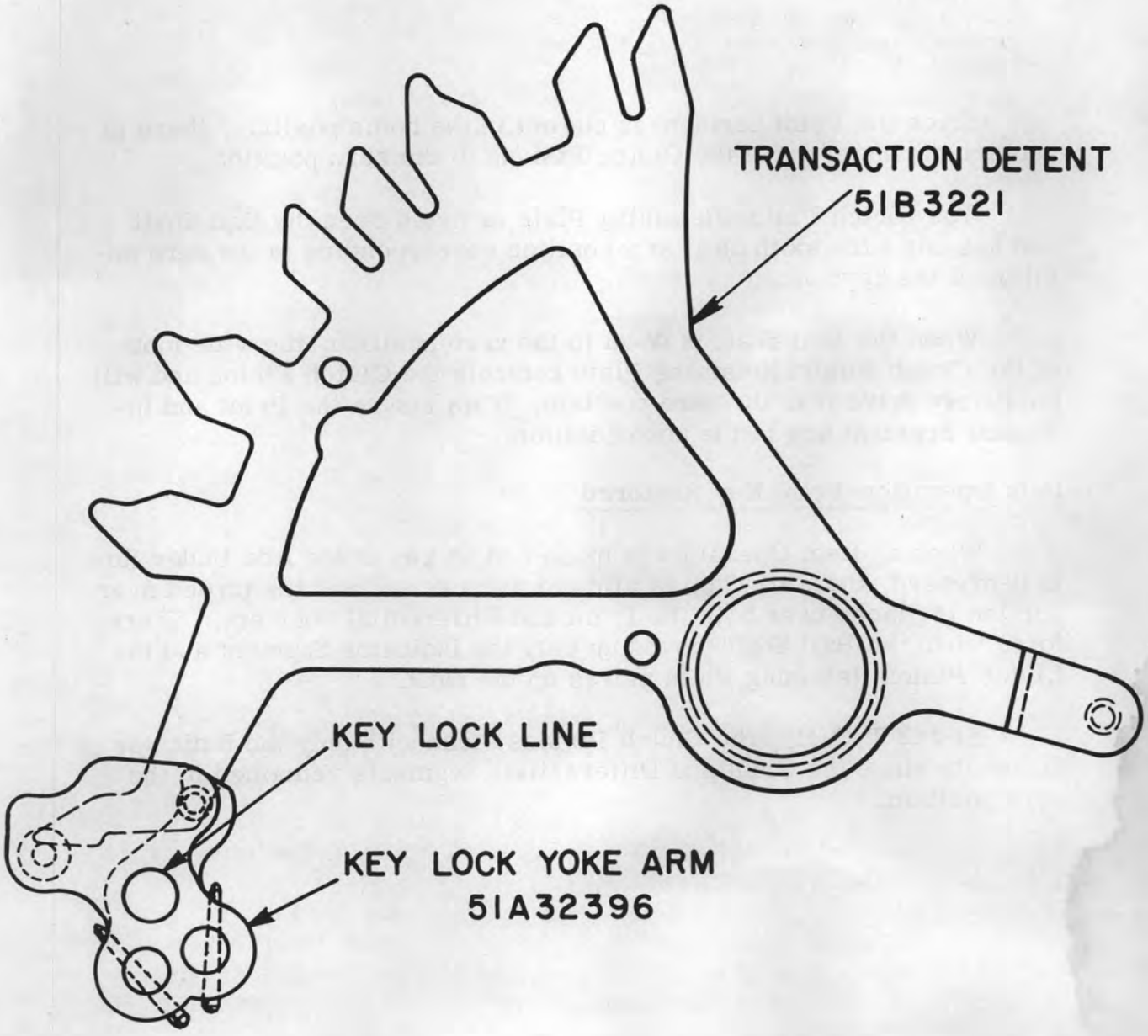
The Clutch Pinion Retaining Plate is yoked over the Bail Shaft and has one wide tooth on it in a position corresponding to the zero position of the keybank.

When the Bail Shaft is down to the zero position, the wide tooth of the Clutch Pinion Retaining Plate controls the Clutch Pinion and will positively drive it to the zero position. This insure the Print and Indicator Segment are in the zero position.

Item Operation-Print Key Restored

When an Item Operation is made and no key in the Add Under Row is depressed, the Zero Stop is allowed to move out and the turned over portion is placed over both the Print and Differential Segment. Therefore, when the Bail Shaft moves up only the Indicator Segment and the Clutch Pinion Retaining Plate moves up the bank.

At 3/8 T.O.H., the Clutch Pinions mesh with only the Indicator Segments since the Print and Differentials Segments remained in the zero position.

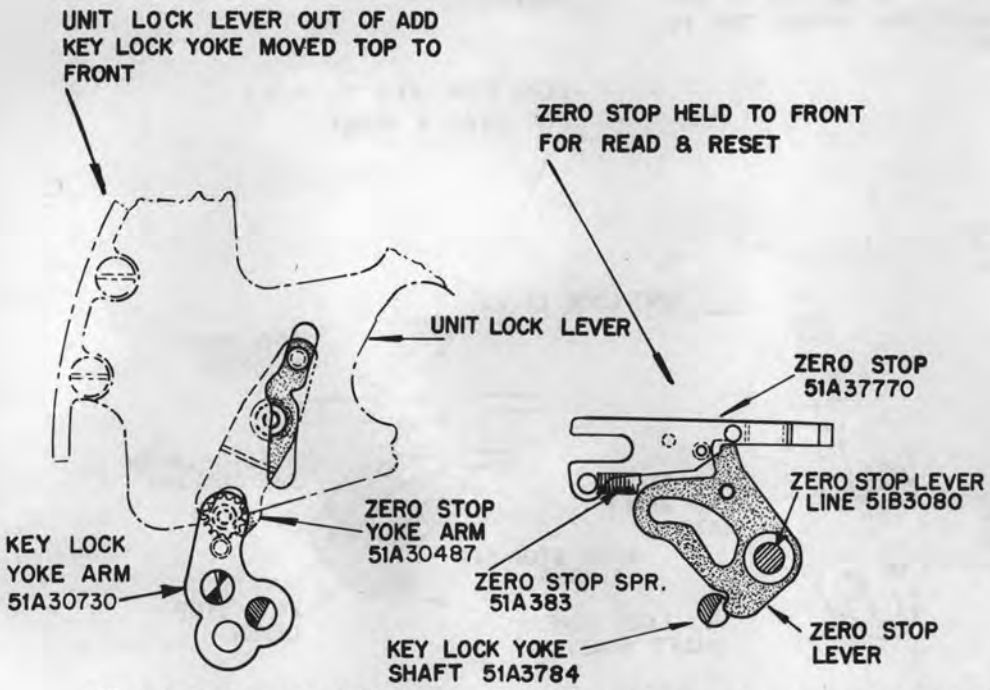


Total or Sub-Total Operation

When the machine is operated on a Total or Sub-Total Operation, the Transaction Detent is cammed down the keybank by the Total or Sub-Total key pin. The lower portion of the Detent caused the Key Lock Yoke to move top to the front.

The Key Lock Yoke Shaft has a milled portion that will be in the path of the Zero Stop Lever preventing their moving top to the back when the Key Lock Line trips.

With the Zero Stop Levers in this position, the Zero Stop is held to the front and the turned over portion remains over the Print Segment.


UNIT LOCK LEVER OUT OF ADD KEY LOCK YOKE MOVED TOP TO FRONT
ZERO STOP HELD TO FRONT FOR READ & RESET
UNIT LOCK LEVER
ZERO STOP 51A37770
ZERO STOP LEVER LINE 51B3080
ZERO STOP YOKE ARM 51A30487
KEY LOCK YOKE ARM 51A30730
ZERO STOP SPR. 51A383
KEY LOCK YOKE SHAFT 51A3784
ZERO STOP LEVER

The Differential Segment is free to move up the bank when the Bail Shaft receives its movement. The Indicator Segment will also move up the Keybank to the zero position.

At 3/8 T.O.H. when the Clutch Pinions move into mesh, the Indicator and Differential Segments are bonded together.

From 3/4 to 1-1/8 T.O.H., the Bail Shaft is moved down carrying the Differential Segment and through the Clutch Pinion the Indicator Segment is moved down.

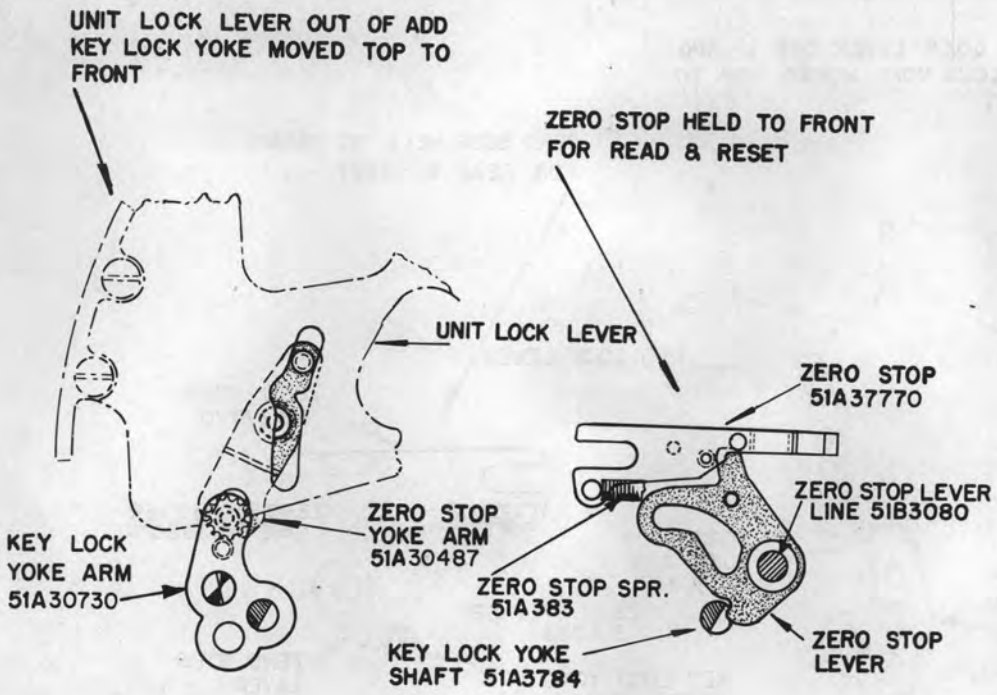
The first tooth of the Differential Segment is slightly longer than the other teeth. This is to insure when the Segment is almost home, the long tooth will carry the Clutch Pinion until the Clutch Pinion Retaining Plate is carried down against it.

On some machine it is possible to depress a key in the Add Under Keybank on a Total or Sub-Total Operation.

All key stems in the Add Under banks are not long enough to be placed in the path of the Differential Segments. Therefore, eventhough the key is depressed on a Total or Sub-Total Operation, it will not stop the Differential Segment. The Counter Pinion in these rows will be Totaled or Sub-Totaled.

The Total or Sub-Total Keys have no control on the Zero Stop Lever in Row 10 Add Under Bank. Therefore, if a Key is depressed, the Zero Stop will move to the back to hold the Zero Differential Segment. This will not affect the correct reading or resetting of the Itemizer since it is only possible to have 7 wheel accumulation in this total.

The symbol of the key in Row 10 that has been depressed will be printed. This type construction is necessary in the event there is Clerk keys in Row 10.


UNIT LOCK LEVER OUT OF ADD KEY LOCK YOKE MOVED TOP TO FRONT
ZERO STOP HELD TO FRONT FOR READ & RESET
UNIT LOCK LEVER
ZERO STOP 51A37770
ZERO STOP LEVER LINE 51B3080
ZERO STOP YOKE ARM 51A30487
KEY LOCK YOKE ARM 51A30730
ZERO STOP SPR. 51A383
KEY LOCK YOKE SHAFT 51A3784
ZERO STOP LEVER

Unit Lock Lever Out Of "Register" Position

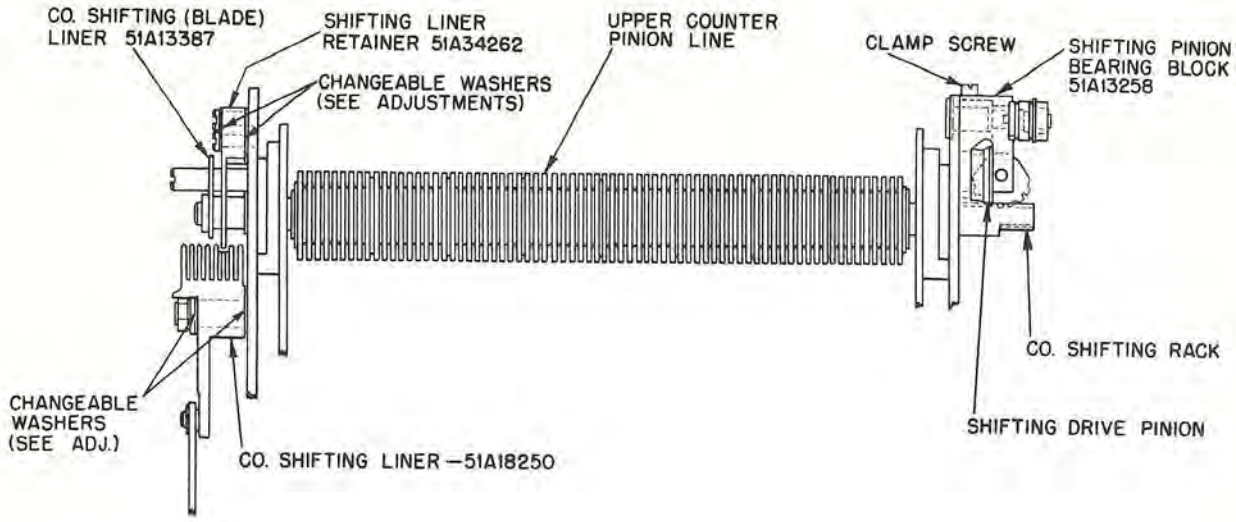
Whenever the Unit Lock Lever is moved out of the "Register" position, the Zero Stop Yoke Arm is moved top to the back. The lower portion of this arm yokes an eccentric in the Zero Stop Yoke Arm which is pinned to the Key Lock Yoke Shaft. The Shaft will be moved to the back and the back milled portion will move up against the Zero Stop Lever for Row 10 preventing it from moving top to the back. This holds the Zero Stop to the front over the Print Segment preventing it from moving up the keybank.

As the Keybank Keyboard Yoke turned top to the front, the Key Lock Yoke will be carried to the back. The right end of the Keyboard Yoke Shaft has the back half milled away and works in the front of the left end of the Key Lock Yoke Shaft which has the front half milled off.

This arrangement causes the Key Lock Yoke to be moved further to the back. The mill cuts in the Shaft will move up against the Zero Stop Lever preventing them from moving top to the back when the Key Lock Line is tripped.

SECTION "V"

UPPER COUNTER
(C-52)

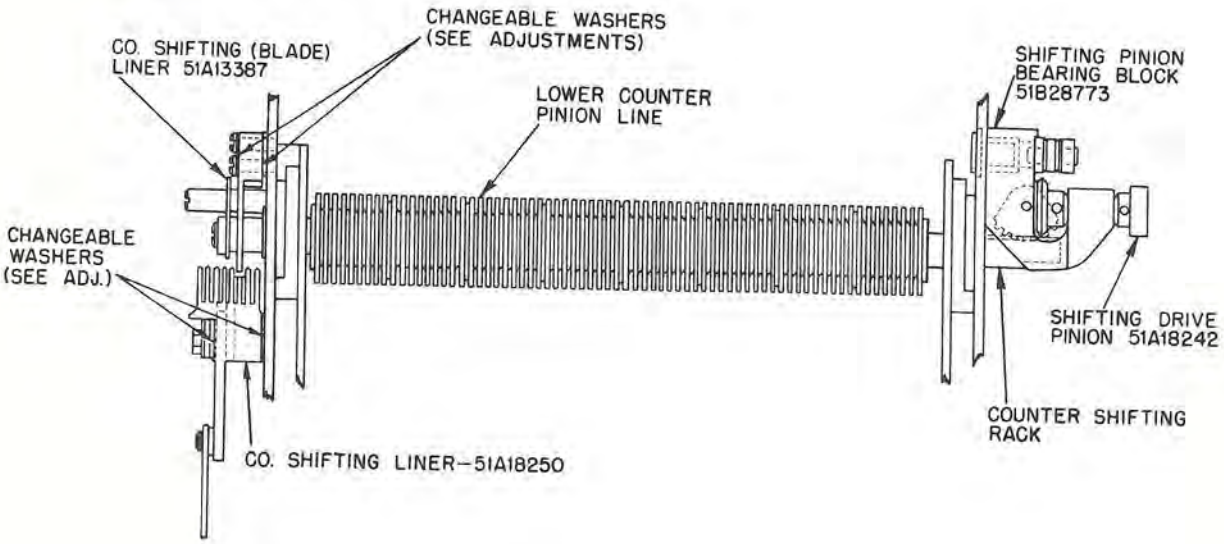


COUNTERS

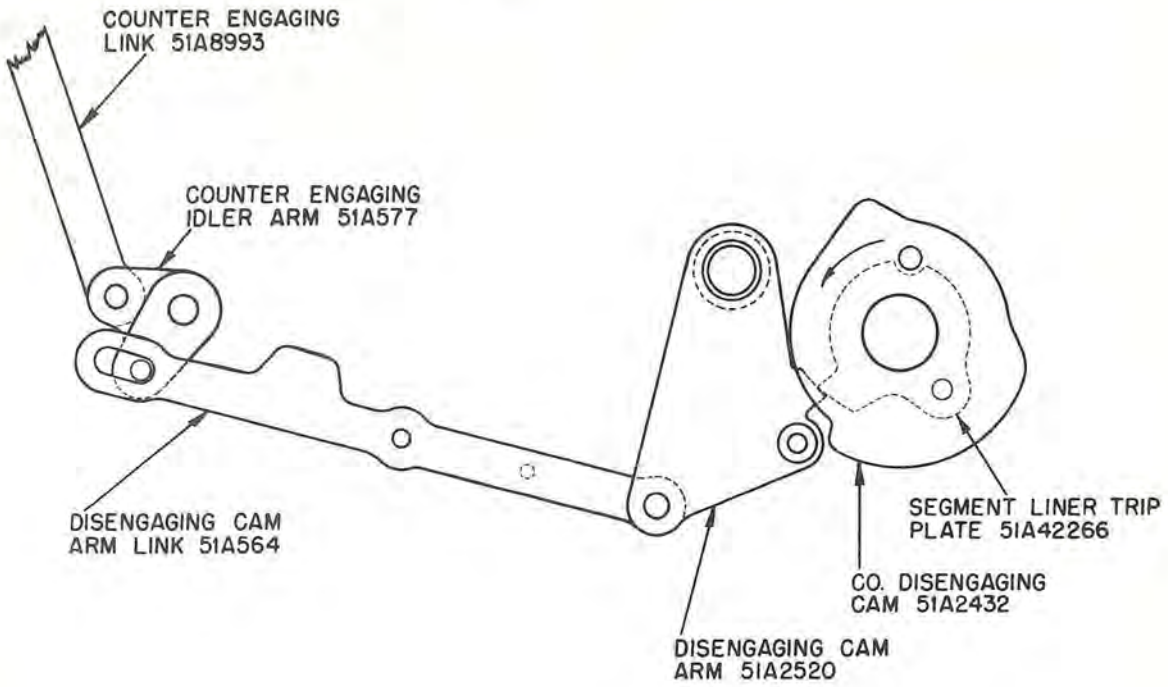
The Counter 51D8526 contains both the Upper and Lower Counter Units as well as the Transfer, Shifting and Engaging Mechanism. The Counter 51D8526 can be removed from the machine as a unit. The removal procedure will be given step by step later in this section.

Both the Upper and Lower Counter has eight groups of nine Pinions each which means, that there are nine totals in each Counter with each total having a capacity of $999,999.99.

LOWER COUNTER
(C-52)


CHANGEABLE WASHERS (SEE ADJUSTMENTS)
CO. SHIFTING (BLADE) LINER 51A13387
LOWER COUNTER PINION LINE
SHIFTING PINION BEARING BLOCK 51B28773
CHANGEABLE WASHERS (SEE ADJ.)
SHIFTING DRIVE PINION 51A18242
COUNTER SHIFTING RACK
CO. SHIFTING LINER—51A18250

COUNTER DISENGAGING MECHANISM
(HOME POSITION)
(C-52)



COUNTER ENGAGING

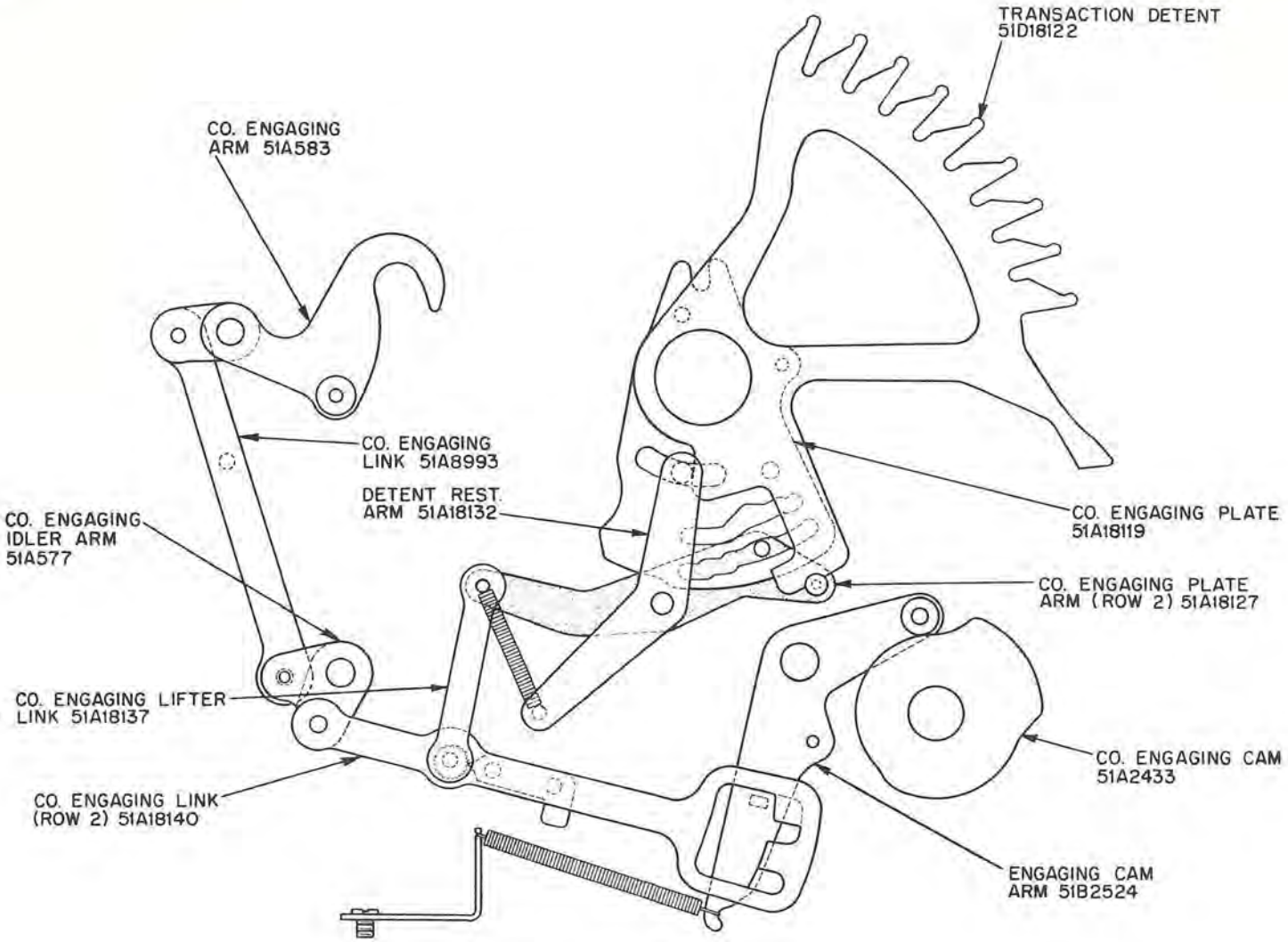
Disengaging for both the Upper and Lower Counters is controlled by the Counter Disengaging Cam 51A2429 pinned to the Main Cam Line.

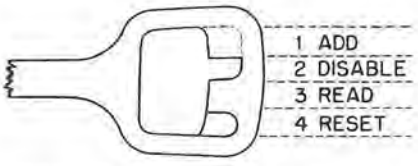
In the home position both Counters are held out of mesh by a high part of the Segment Liner Trip Plate, assembled to the Disengaging Cam, against a formed portion of the Disengaging Cam Arm 51A2520.

There are two Disengaging Cam Arm Links which are held together by a stud in the center and connected at the front to the Disengaging Cam Arm 51A2520.

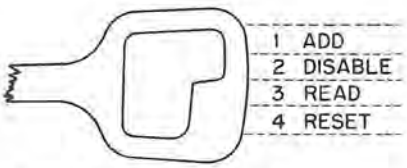
The elongated opening in the right link is over the lower stud in the Counter Engaging Idler Arm, holding the Idler Arm up in back and the Counter Engaging Link 51A8993 up. The Counter Engaging Arm 51A583 will be held top to the front to hold the Upper Counter out of mesh.

The elongated opening in the left Disengaging Cam Arm Link holds the Counter Engaging Arm 51A569 bottom to the back holding the Lower Counter out of mesh.





LEFT CO. ENGAGING LINK
(ADD)



RIGHT CO. ENGAGING LINK
(RESET)

UPPER COUNTER-ITEM OPERATION

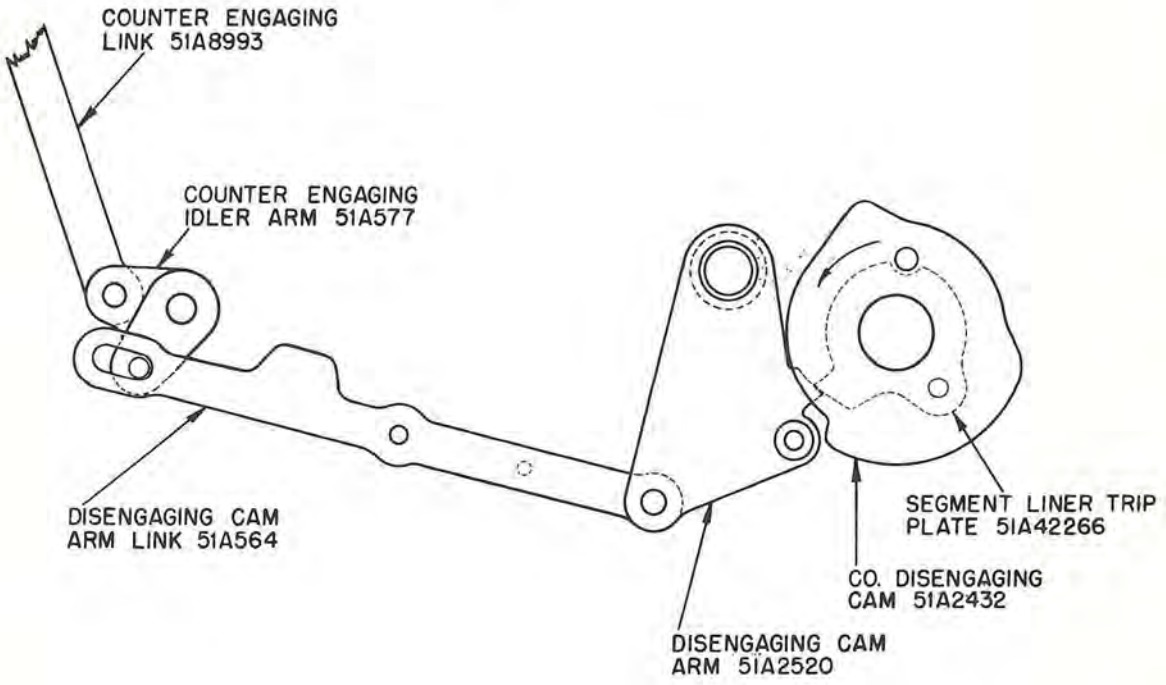
The two Counter Engaging Links furtherest to the right control the Upper Counter. These two links are held together by two studs and will be referred to as the Right and Left Counter Engaging Links for the Upper Counter.

There is a separate Counter Engaging Cam and Cam Arm for each Link. The Right Cam Arm and Link engage the Counter on "Reset" operations and the Left Counter Engaging Arm engages the Counter on "Add" operations.

On an Item Operation, the Counter Engaging Links remain down in the 1st position. In this position there will be a high surface of the left Counter Engaging Link in path of the stud in the "Add" Counter Engaging Arm and a low surface of the right Counter Engaging Link in path of the "Reset" Engaging Cam Arm.

As the machine operates, the Counter Disengaging Cam 51A2429 and Segment Liner Trip Plate will turn top to the back. At 1/16 T.O.H. the high part of the Plate will move away from the formed portion of the Disengaging Cam Arm 51A2520 freeing up the Counters to be engaged.

COUNTER DISENGAGING MECHANISM
(HOME POSITION)
(C-52)


COUNTER ENGAGING LINK 51A8993
COUNTER ENGAGING IDLER ARM 51A577
DISENGAGING CAM ARM LINK 51A564
SEGMENT LINER TRIP PLATE 51A42266
CO. DISENGAGING CAM 51A2432
DISENGAGING CAM ARM 51A2520

Between home and 1/8 T.O.H., the "Reset" Counter Engaging Cam Arm 51B2524 is carried bottom to the front by a high part of the "Reset" Counter Engaging Cam. However, since there is a low surface of the right Counter Engaging Link in path of the stud in the Counter Engaging Cam Arm, the Counter Engaging Links will not receive any movement and the upper Counter will remain out of mesh.

At 1/2 T.O.H. the high part of the Counter Engaging Cam moves away from the roll on the "Reset" Counter Engaging Arm and spring tension will restore this arm.

Also at 1/2 T.O.H. the 1st high part of the Counter Disengaging Cam Arm will contact the roll on the Disengaging Cam Arm and botton the elongations of the Disengaging Cam Arm Links on the studs in the Idler Arm and Counter Engaging Arm.

Just before 3/4 T.O.H. the high part of the Counter Disengaging Cam will move away from the roll on the Counter Disengaging Cam Arm freeing up the Counters to be engaged.

Also at this time, the "Add" Counter Engaging Cam will carry the "Add" Counter Engaging Cam Arm bottom to the front and the stud in this arm will contact the high surface of the Left Counter Engaging Link carrying it to the front and turning the Counter Engaging Idler Arm top to the back.

Through the connections of the Counter Engaging Links the Counter Engaging Arm will be carried top to the back.

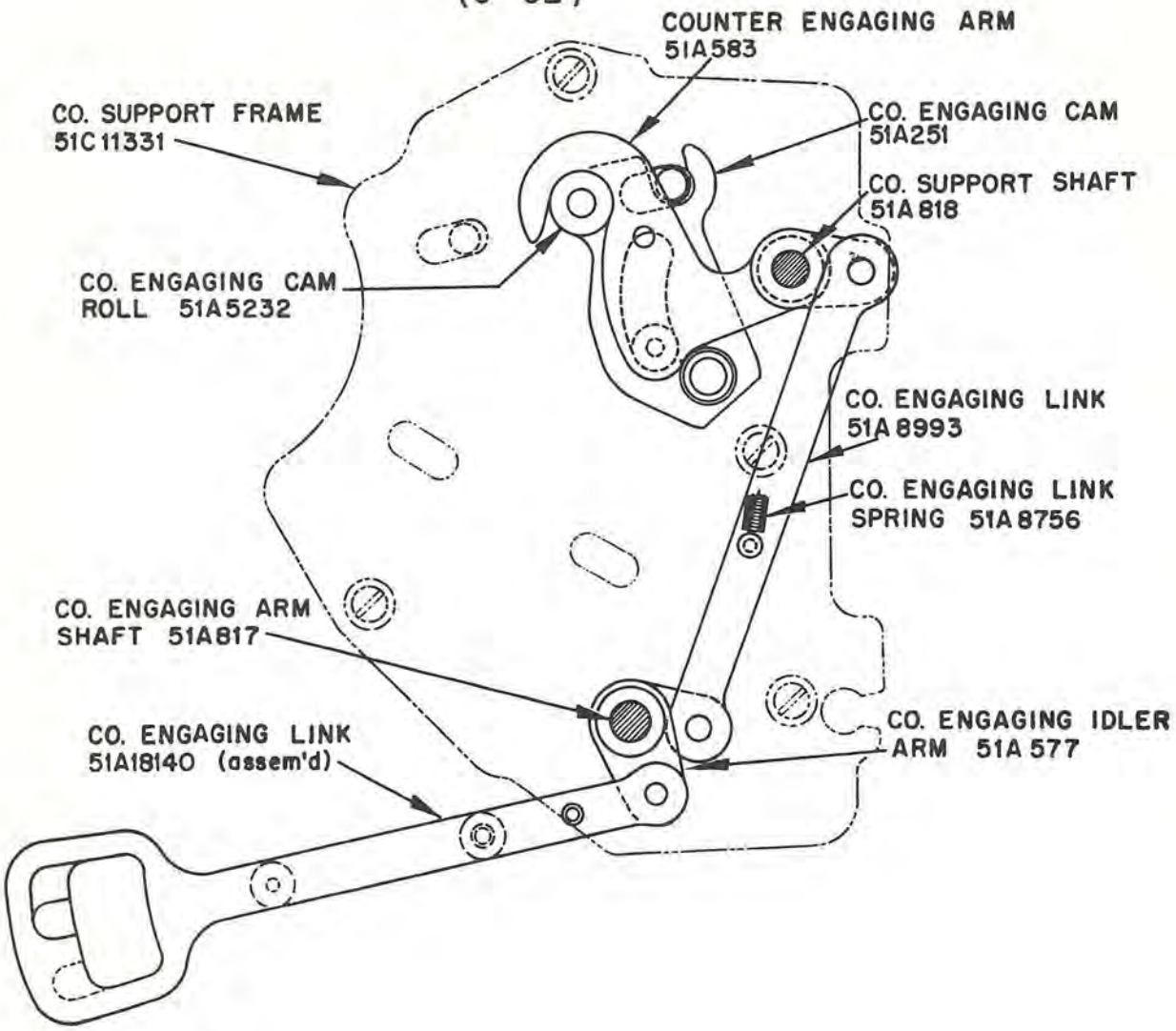
As this arm moves back, the "Hook" portion will move off the Counter Engaging Cam Roll. At this same time the Roll on the Counter Engaging Arm will move up the raceway of the Counter Engaging Cam 51B2168 forcing the Engaging Cam top to the front to engage the Counter.

At 1-1/4 T.O.H. the high part of the "Add" Counter Engaging Cam will move away from the Roll on the Counter Engaging Arm and spring tension will restore this arm. At the same time, the high part of the Counter Disengaging Cam will carry the Disengaging Cam Arm Links back to disengage the Counter.

UPPER COUNTER

ROW 2

(C-52)



ENGAGING

With the Counter Engaging Arm down in front, the "Hook" of the Arm is over the Counter Engaging Cam Roll 51A5232, holding the Counter Engaging Cam and the Counter Engaging Shaft 51A251 top to the back.

The Counter Engaging Cam Shaft Assembly 51A251 consists of the Cam Shaft and two arms that yoke hubs on each side of the Upper Counter Unit. This arrangement gives even carry to the Upper Counter in and out of mesh.

As the Counter Engaging Arm is moved up in front, the Roll in the Arm will ride up the raceway of the Cam. As soon as the "Hook" in the Arm is away from the Counter Engaging Cam Roll, the roll in the arm will move the Cam Arm top to the front, moving the Counter to the front to engage the Segments.

When the Counter is fully in mesh the Counter Stop Arms 51A8974 (left) and 51A8972 (right) will come against the Counter Stop Rolls, stopping the Counter to prevent meshing too deep with the Segments.

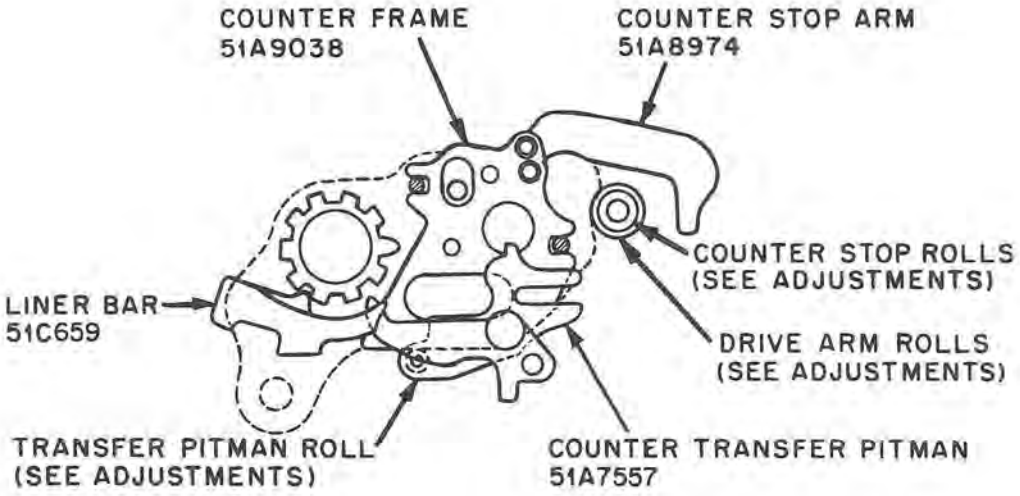
The Roll on the Counter Engaging Arm 51A583 will then move into the neutral part of the raceway in the Counter Engaging Cam.

As the Counter Engaging Arm moves down to disengage the Counter, the Roll on the Arm moves into the working part of the raceway, in the Counter Engaging Cam, moving the Cam top to the back to disengage the Counter.

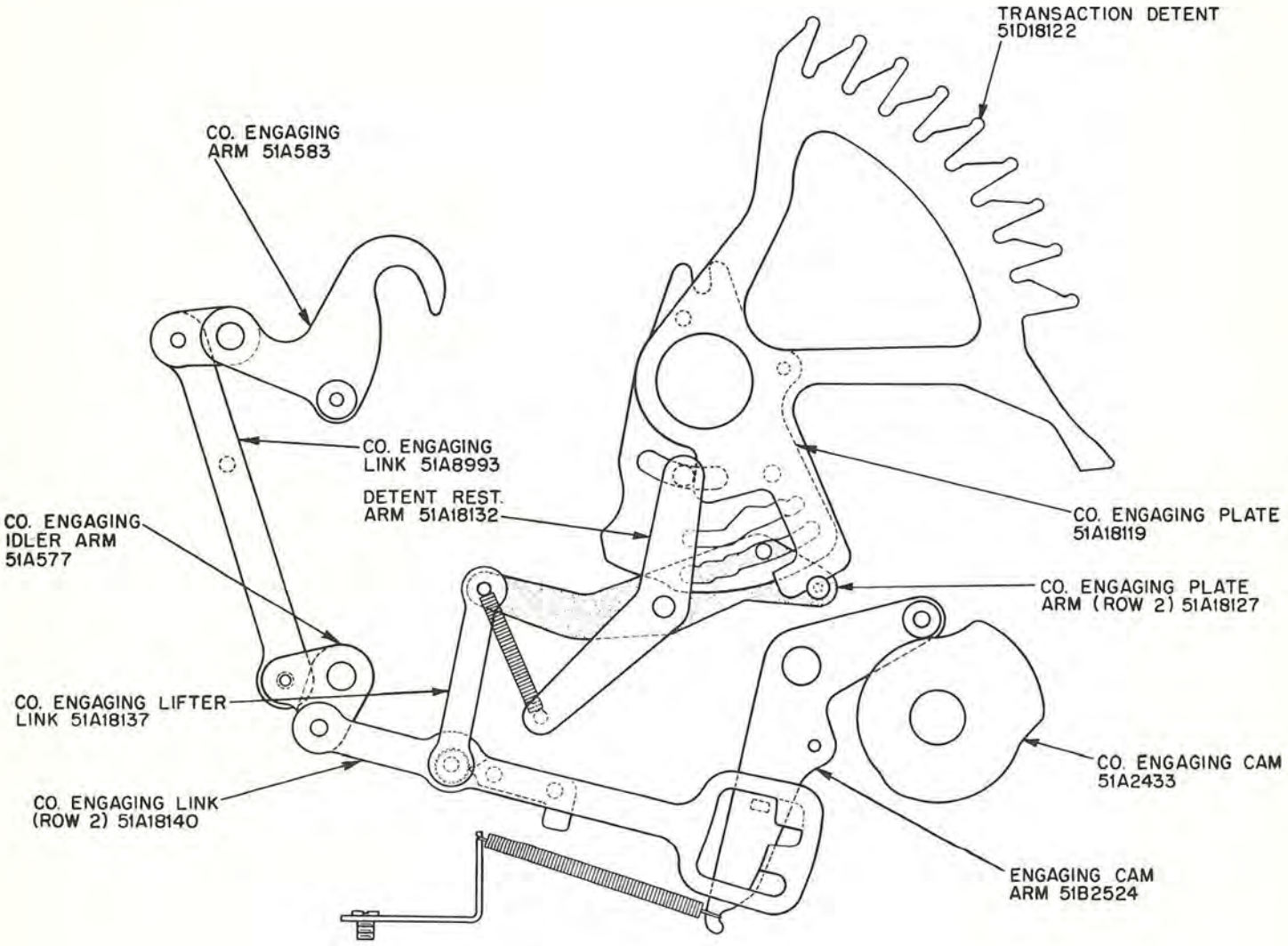
When the Counter is out of mesh, the Counter Frame will come against the Counter Stop Rolls. This stops the Counter and holds it in position so the Transfers will restore.

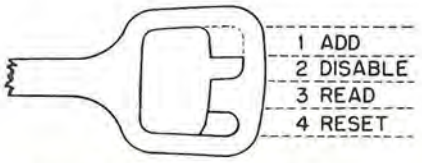
As the "Hook" on the Counter Engaging Arm moves over the Counter Engaging Cam Roll, the Roll in the Counter Engaging Arm moves into a neutral part of the raceway in the Cam.

(C-52)

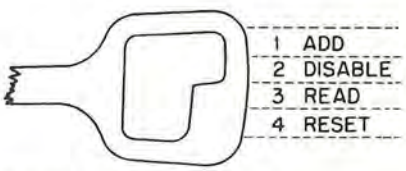


UPPER COUNTER ENGAGING (C-52)





LEFT CO. ENGAGING LINK
(ADD)



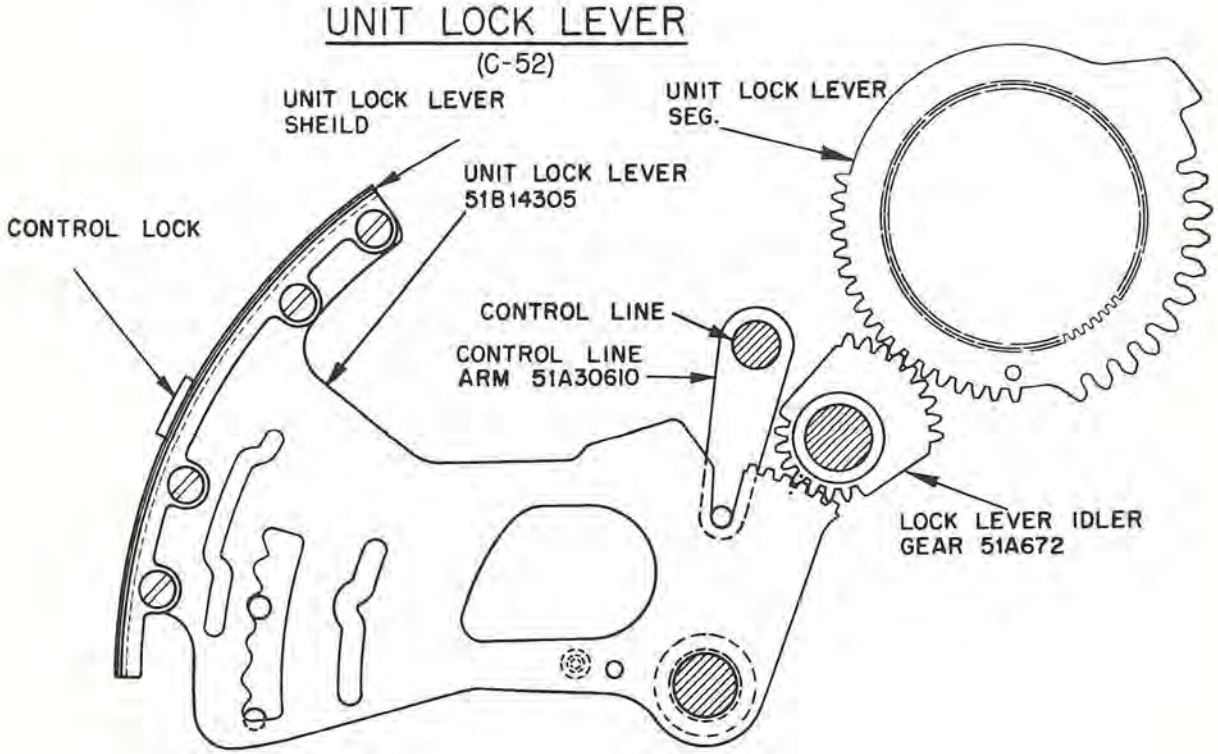
RIGHT CO. ENGAGING LINK
(RESET)

TOTAL OPERATION

When a Row 1 key is pressed, the Key Pin will contact the camming surface of the Transaction Detent 51D18122 carrying it down in front. The bottom of the detent will move to the back and cam the Counter Engaging Plate Arm (Row 2) down in front. The back of this arm will move up and through the Counter Engaging Lifter Link will lift the Counter Engaging Links up one position placing low surfaces in the path of the studs on both Counter Engaging Cam Arms to disable the Upper Counter.

Also as the Transaction Detent moves, the back of the Detent will contact a stud in the Detent Restoring Arm and cam it down in back, increasing spring tension between this arm and the two Counter Engaging Plate Arms.

This spring tension is used to restore the Transaction Detent when the key is released at the end of the operation.



READ AND RESET ROW 1

When the unit lock lever is moved to the Read or Reset Row 1 position, the Upper Counter Engaging Links will be raised one position to disable Upper Counter Engaging.

As the Unit Lock Lever is moved down, it will carry the Control Line Arm, pined to the Control Line, bottom to the front and turn the Control Line top to the back.

The Counter Control Plate arm, pinned to the Right End of the Control Line, will also be carried bottom to the front and through the yoking connection to the Counter Engaging Plate 51A18119, will carry the plate bottom to the back.

As the Counter Engaging Plate moves bottom to the back, the Lower Raceway will cam the Engaging Plate Arm, for the Upper Counter, down in front. The back of this arm will move up and through the Counter Engaging Lifter Links, raise the Upper Counter Engaging Links up one position to disable the Counter.

LOCK REGISTER POSITION

When the Unit Lock Lever is moved to the Lock Register Position the Control Line will be turned top to the front which will carry the Counter Engaging Plate 51A18119 bottom to the front. The bottom raceway in the Engaging Plate will raise the Upper Counter Engaging Links one position disabling the Upper Counter.

READ ROW 2

When moving the Unit Lock Lever to Read Row 2, the Counter Engaging Plate will raise the Counter Engaging Links, for the Upper Counter, to the 3rd position, there is a high surface of both links in the path of the studs on both Counter Engaging Cam Arms.

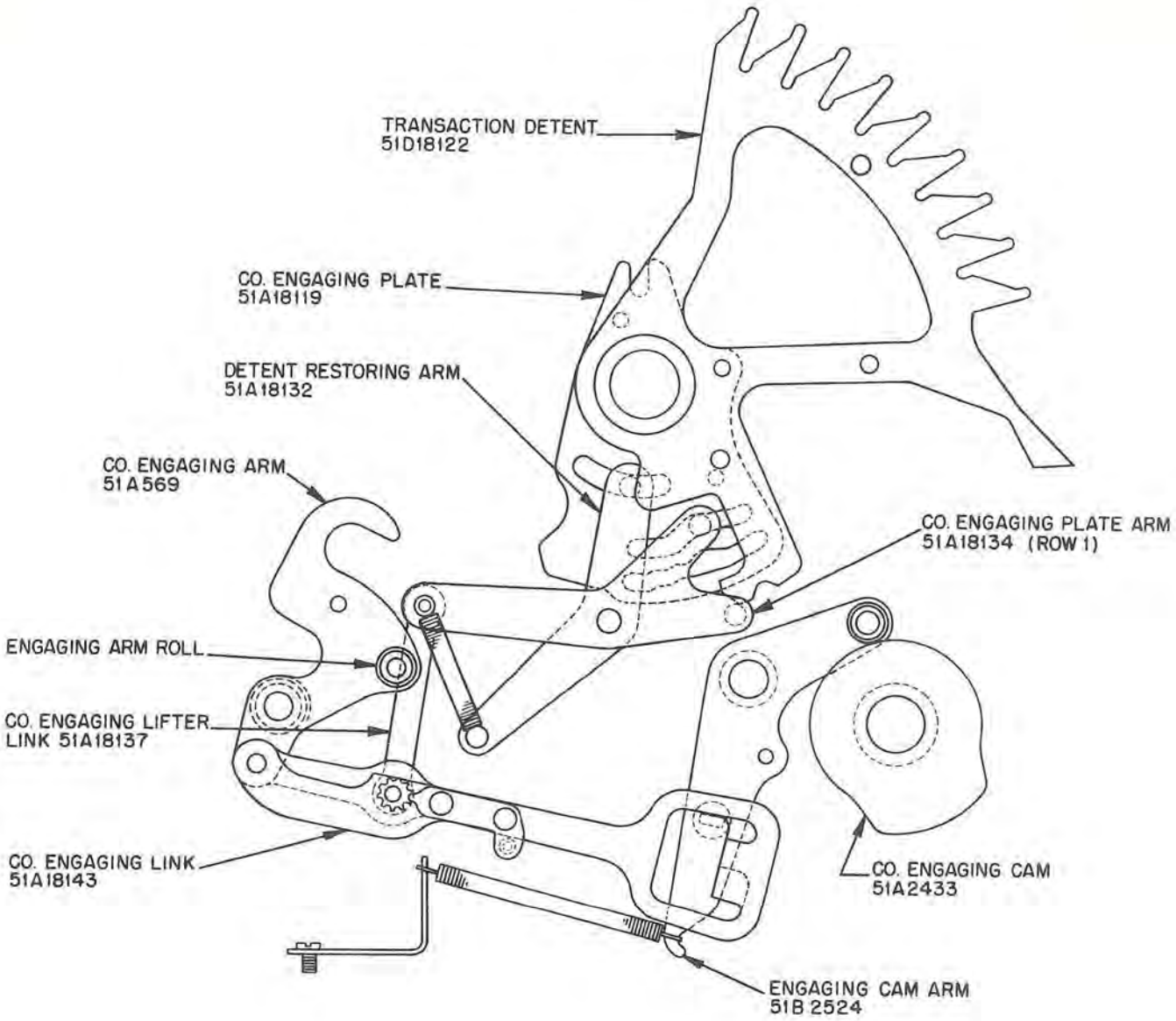
RESET ROW 2

By moving the Unit Lock Lever to Reset Row 2, the Counter Engaging Links are raised to the 4th position. This places a high surface of the Right Engaging Link in the path of the Stud in the Reset Counter Engaging Cam Arm and a low surface of the Left Engaging Link in the path of the Add Counter Engaging Cam Arm.

The Upper Counter will now be engaged at 1/8 T.O.H. to reset the Upper Counter but will not be engaged at 3/4 T.O.H..

LOWER COUNTER ENGAGING

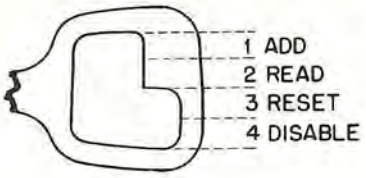
C-52



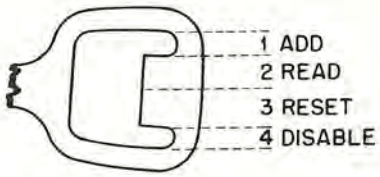
LOWER COUNTER ENGAGING

ITEM OPERATION

The two Counter Engaging Links for the lower counter are located just to the left of the Upper Counter Engaging Links. There is a Counter Engaging Cam Arm for each of these links with the Right Cam Arm being the "Add" Arm and the left arm the "Reset" Cam Arm.



RIGHT CO. ENGAGING LINK
(ADD)



LEFT CO. ENGAGING LINK
(RESET)

On an Item Operation, the Counter Engaging Links, for the Lower Counter, will remain down in the 1st position. With the links down, the Right Link will have a high surface in the path of the stud on the "Add" Counter Engaging Cam Arm and the left link has a low surface in the path of the "Reset"Cam Arm.

With the Engaging Links in this position, the Lower Counter will be engaged at 3/4 T.O.H. in the same manner as upper Counter Engaging.

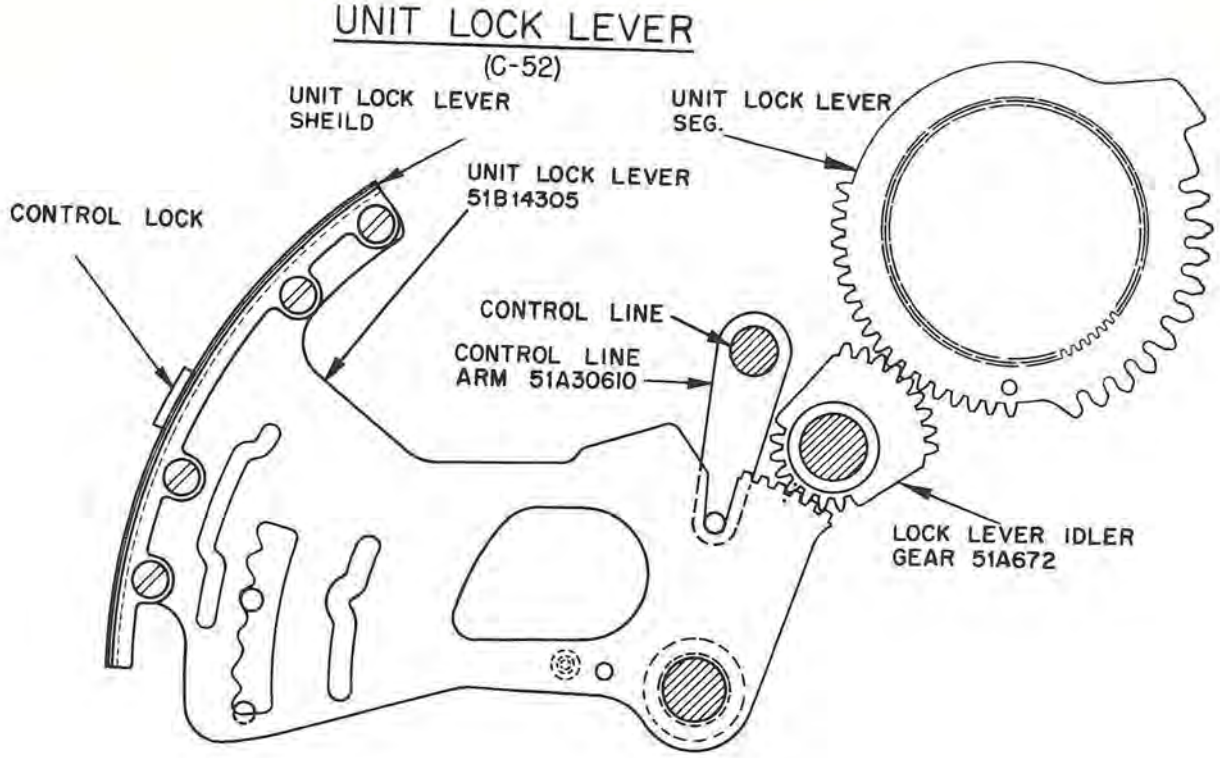
TOTAL OPERATION

When a Row 1 key is used, the Transaction Detent 51D18122 will be cammed bottom to the back. The back of the lower projection of the detent will cam the Counter Engaging Plate Arm (Row 1) down in front and up in back. Through the connections of the Counter Engaging Lifter Link, the Counter Engaging Links, for the Lower Counter, will be raised one position.

In this position, there is a high surface on both links in path of the Counter Engaging Cam Arms which will cause the Lower Counter to be engaged at 1/8 T.O.H. and again at 3/4 T.O.H. to read the lower Counter.

READ ROW 1

When the Unit Lock Lever is moved to the Read Row 1 position, the Counter Engaging Plate will be carried bottom to the back. The camming surface of the center raceway will cam the Counter Engaging Plate Arm (Row 1) down in front and up in back and raise the Counter Engaging Links one position to read the Lower Counter.



RESET ROW 1

When the Unit Lock Lever is moved to the Reset Row 1 position, the Counter Engaging Links will receive an additional one position movement up. In this position there is a high surface in the path of the Left Counter Engaging Arm and a low surface in the path of the Right Counter Engaging Arm.

The Counter will now be engaged at 1/8 T.O.H. to reset the Totals.

LOCK REGISTER

With the Unit Lock Lever in the Lock Register position, the Lower Counter Engaging Links are raised to the 2nd position which is read

READ AND RESET ROW 2

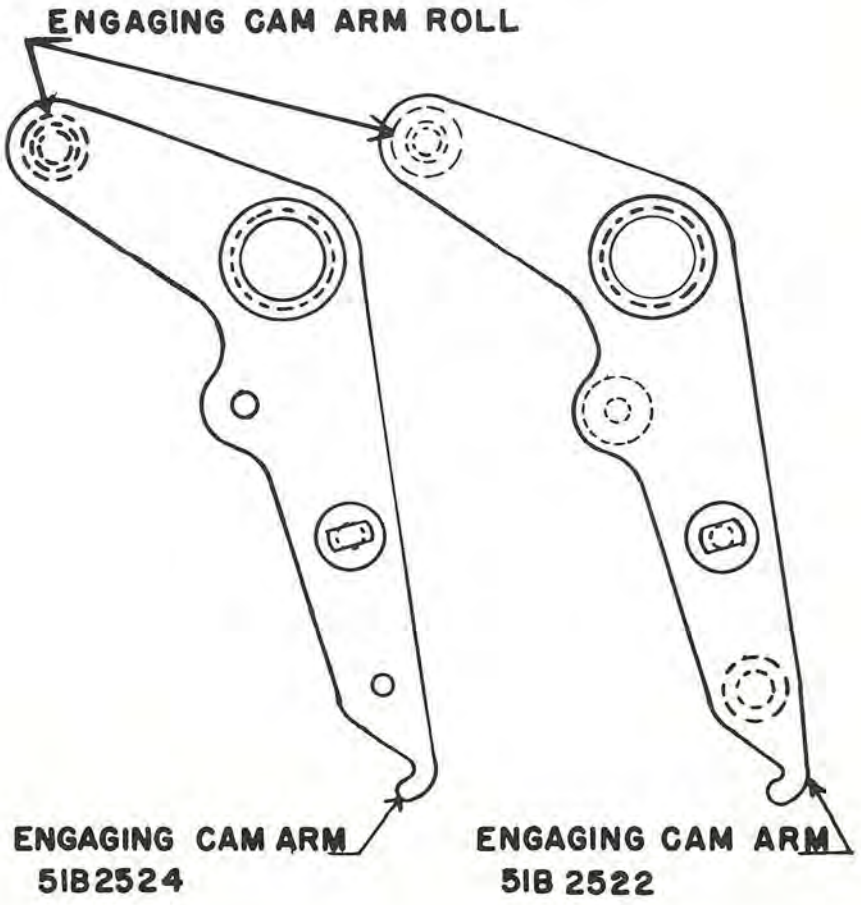
With the Unit Lock Lever in Read or Reset Row 2, the Lower Counter Engaging Links are raised to the 4th position to disable the Lower Counter. In this position both Engaging Links have low surfaces in the path of the Counter Engaging Cam Arms.

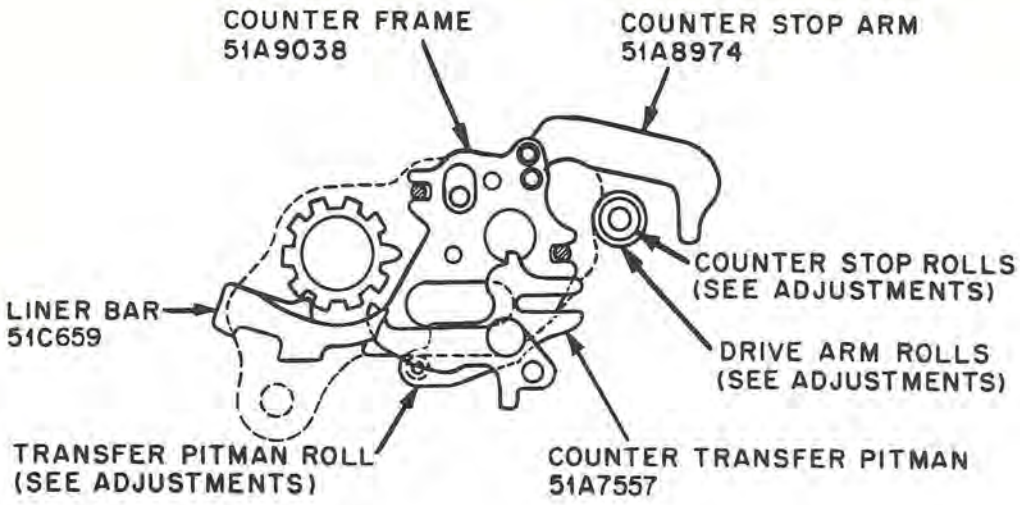
ENGAGING CAM ARMS

When the Counters are engaged, on both Add and Reset Timing, the Rolls on the Counter Engaging Arms must be in the neutral part of the raceway in the Counter Engaging Cams, with less than .050" clearance between the Rolls and the top of the raceways.

To check, operate the machine until the Counter Engaging Arms have received all of their carry. Using pliers, move the Counter Engaging Arms back and forth and watch the Pinion Liners. If the Liners receive movement at this time, it indicates that the Rolls are not fully into the neutral part of the raceway. To make this adjustment, change the Rolls on the Counter Engaging Arms.

51A8210	Engaging Cam Arm Roll	.370
51A8109	" " " "	.390
51A8209	" " " "	.360
51A8211	" " " "	.380
51A8320	" " " "	.350





DEPTH OF MESH

After installing the proper size rolls on the Engaging Cam Arms, check for proper depth of mesh.

LOWER COUNTER

With 9's on the Itemizer, remove the "In" Stop Rolls and Key Banks. Operate machine until the Differential Segments are up the bank. Stop operation before Clutch Pinions mesh with Differential Segments.

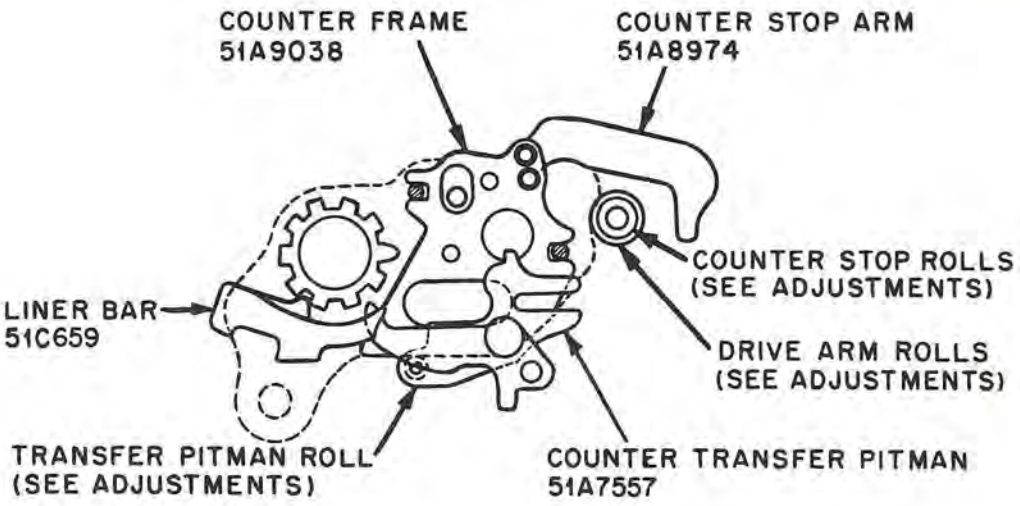
Checking each bank, move the Differential Segments up and down. There should be no (bony) action. Also while moving Segments, watch the Pinion Liners for movement. If the liners move, the long tooth is nipping the Liner which indicates that the counter is not far enough in mesh.

If (bony) action occurs, the Counters are too deep in mesh.

To adjust for meshing too deep, (bony) use a smaller roll on the Counter Engaging Arm.

To obtain deeper mesh, use a larger Roll on the Counter Engaging Arm.

To check the Upper Counter, add all 9's to one of the Totals and then move the Unit Lock Lever to read Row 2. Select the Total that contains the 9's and with the "In" Stop Rolls and Key Banks removed, test and adjust the Upper Counter the same as the Lower Counter.



After depth of mesh has been adjusted properly, "In" Stop Rolls should be used that will turn by finger pressure with the Counters engaged.

51A9567	Counter Stop Roll	.335
51A9568	" " "	.340
51A9569	" " "	.345
51A9346	" " "	.330
51A10092	" " "	.350
51A11825	" " "	.355
51A18539	" " "	.324
51A14212	" " "	.361

COUNTER ENGAGING LIFTING LINKS

With the Unit Lock Lever in Register, trip the machine using a Total Key. Check the play in each Counter Engaging Plate Arm. The play should be very slight. If the Engaging Plate Arms are either tight or have excessive play, replace the bottom rolls with one of the rolls listed below.

51A26647	Counter Engaging Arm Roll	.156
51A26650	Counter Engaging Arm Roll	.166

Move Unit Lock Lever to Read Row 2 and operate machine until the Lower Counter "Reset" Counter Engaging Arm moves to the front (1/8 T.O.H.). Check clearance between top of Engaging Arm Stud and high surface of Counter Engaging Link, should not exceed .003.

Operate machine to 3/4 T.O.H. and make same check on "add" Counter Engaging Cam Arm. Clearance should not exceed .003.

Use Eccentric in bottom of Counter Engaging Lifter Link to make this adjustment.

Move Unit Lock Lever to Read Row 1 and adjust Counter Engaging Links for Upper Counter using same test as for Lower Counter.

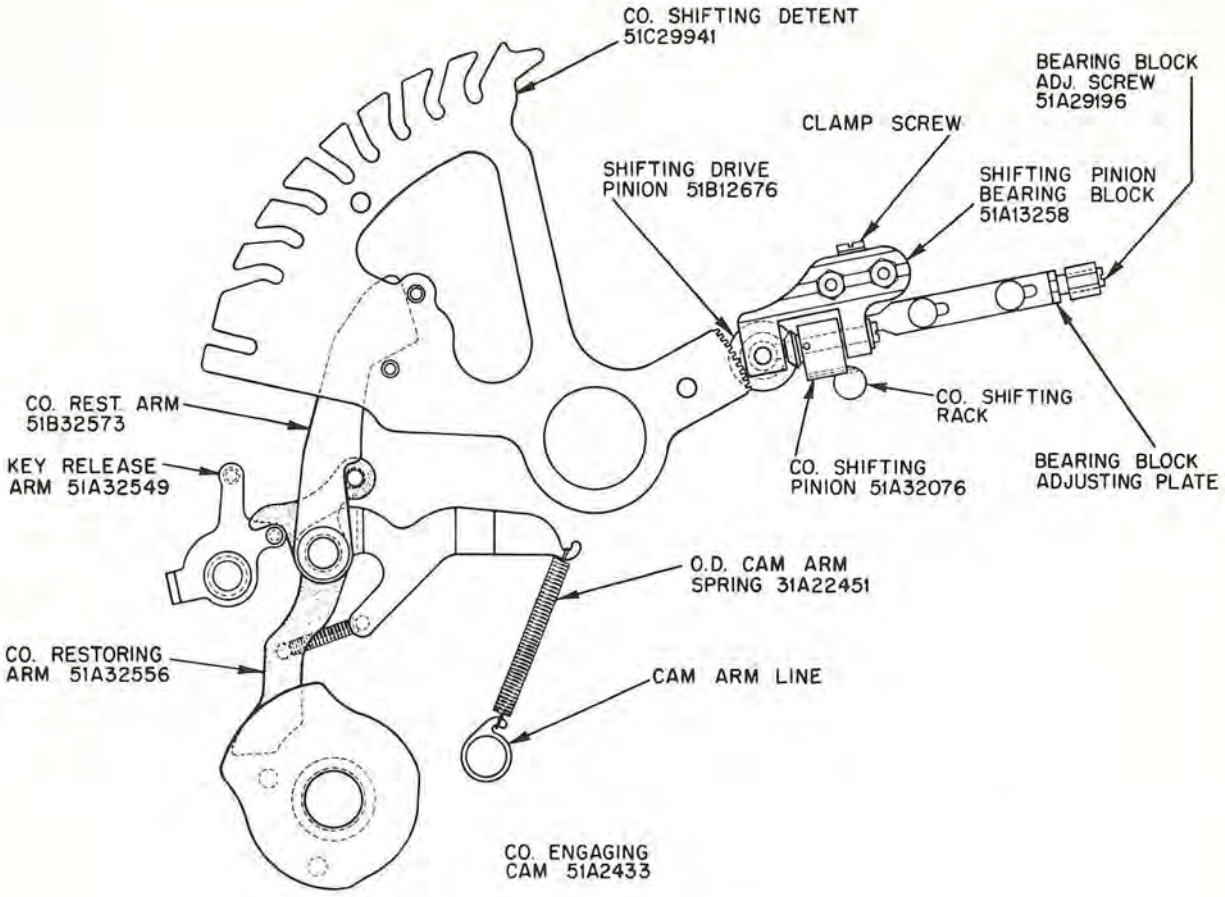
To adjust for meshing too deep, use the Counter Engaging Roll 51A36055 - .3688. This is smaller than the standard roll (51A10519 - .3745) that is placed on the machine in assembly.

To adjust the Counter deeper into mesh, the Counter Engaging Arm will have to be replaced by the arm listed below.

51A36793	Counter Engaging Arm (upper counter)
51A32558	Counter Engaging Arm (lower counter)

The Rolls on these arms are located further from center which will give more movement to the Counter Engaging Cam.

UPPER COUNTER SHIFTING
(C-52)



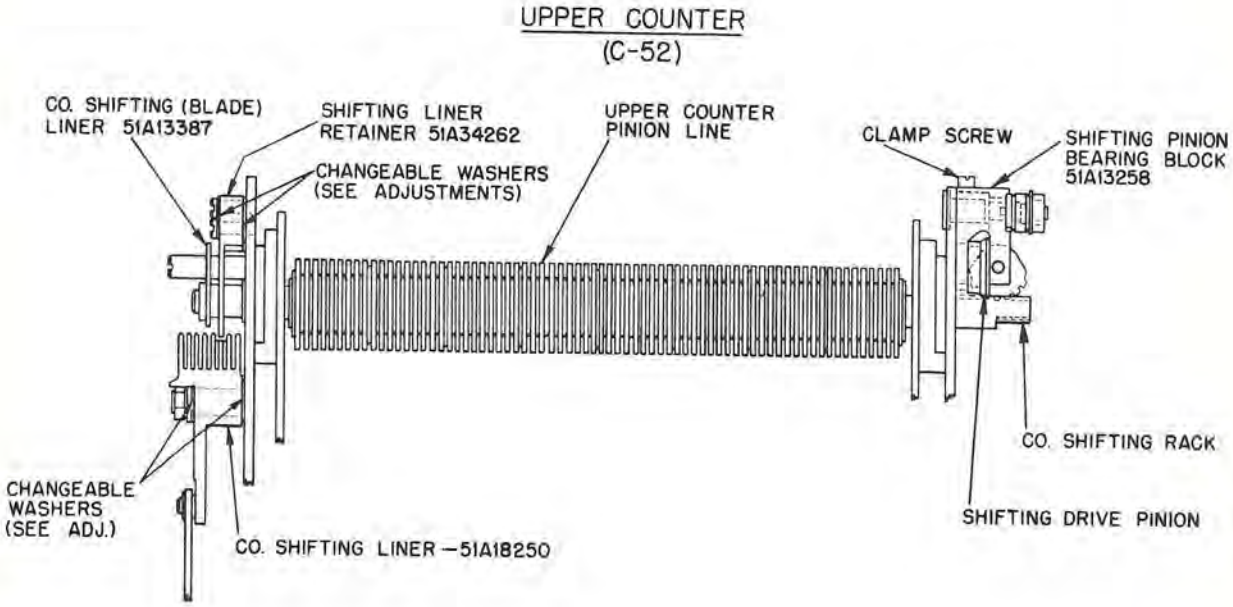
UPPER COUNTER

The Upper Counter is shifted manually by Keys in Row 2.

The top four keys in Row 2 shift the Counter to the left and the next four keys shift the Counter to the right. The bottom key does not shift the Counter. The Total for this key represents the home position of the Counter.

When one of the top four keys in Row 2, is used, the key pin will cam the Counter Shifting Detent 51C29941 top to the back. As the detent moves up in front, the bottom front roll will cam the Counter Restoring Arm 51A32573 top to the front and up in back stretching the spring attached to the back of this arm.

The teeth on the back of the Detent are in mesh with the Shifting Drive Pinion located in the Shifting Bearing Block 51A13258. The Shifting Drive Pinion will turn top to the front of the machine and being in mesh with the Counter Shifting Pinion will turn it bottom to the left. The Counter Shifting Pinion is meshed with the Co. Shifting Rack which is screwed into the Counter Pinion Tube. The Co. Shifting Rack will be carried to the left, moving the Counter Pinion Tube and Pinions to the left. The amount of movement given the Counter is determined by the camming surface of the Counter Shifting Detent.

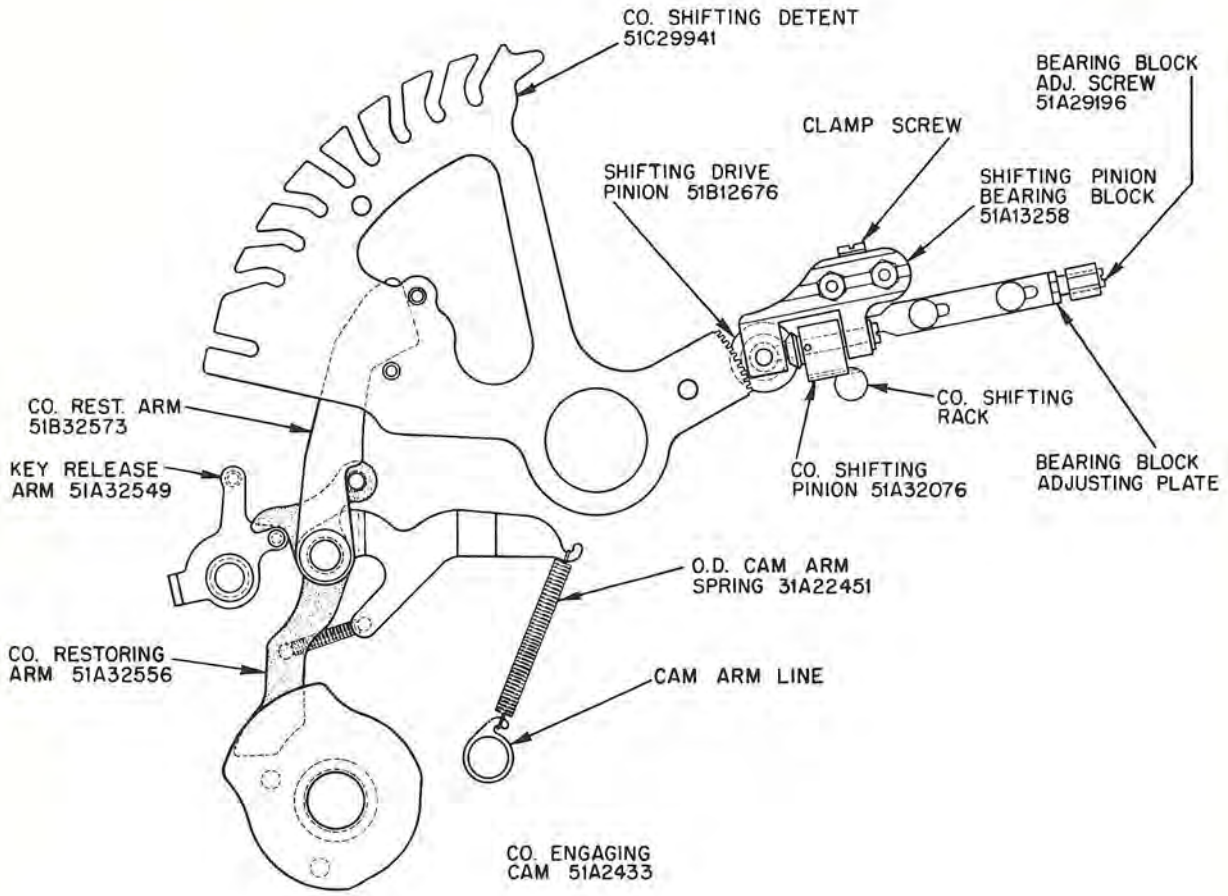


At 1/8 T.O.H. a Roll, located between the Counter Engaging Cam 51A2432 and the Special Counter Reset Cam will contact the Counter Restoring Arm 51A32556 and move it bottom to the front stretching the spring between the two Counter Restoring Arms. This additional spring tension insures that the Counter Shifting Detent is snug against the key pin when the counter is engaged.

At 3/4 T.O.H. a second roll, located between the Counter Engaging Cam and Special Counter Reset Cam, will again add this spring tension to the Counter Shifting Detent.

At 1-3/4 T.O.H., the Key Lock Line will be turned top to the front release the keys. As this happens a stud in the back of the Key Release Arm 51A32549 will cam the Counter Restoring Arm 51A32556 top to the back and bottom to the front again stretching the spring between the two Counter Restoring Arms.

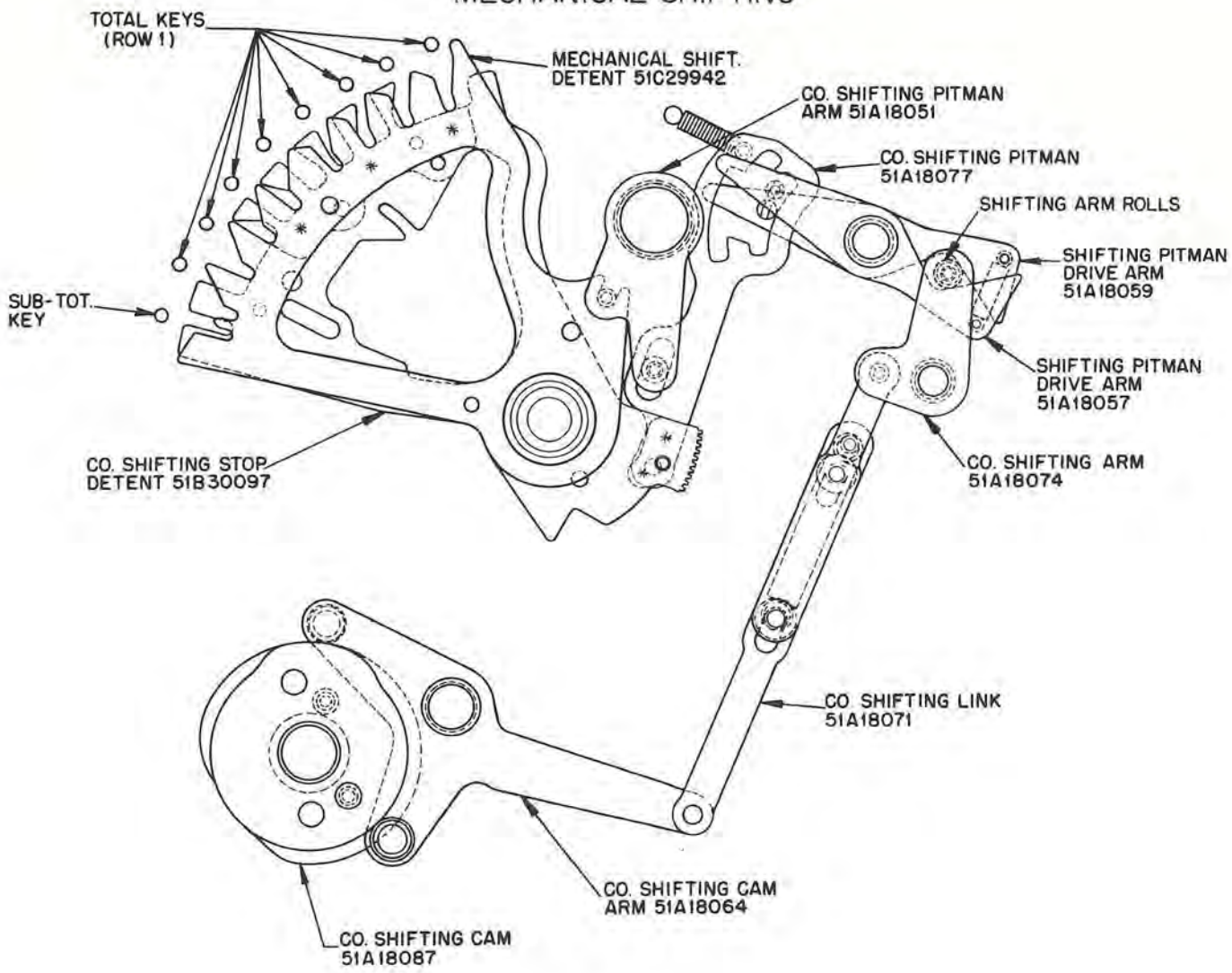
UPPER COUNTER SHIFTING
(C-52)



The additional tension of this spring is used at this time to assist in restoring the Counter to the home position.

When the lead is backed off of the Key Lock Line, the stud in the Key Release Arm will move away from the Counter Restoring Arm 51A32556 allowing this arm to restore and take the spring tension of the Counter Restoring Arm Spring 51A15535 off of the Counter Restoring Arm 51A32573.

When the bottom key in Row 2 is used, the key pin will enter the straight cut in the bottom of the Counter Shifting Detent leaving it in the home position. In this position, the center Pinion of each Pinion group is aligned to Engage the Differential Segments.


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO. SHIFTING CAM 51A18087

LOWER COUNTER SHIFTING - REGISTER POSITION

With the Unit Lock Lever in Register position and a Total key in Row 1 pressed, the Lower Counter w'll shift mechanically at 5/8 T.O.H. The Counter is shifted at this time, to add the amount cleared from the Itemizer into the selected Clerk's Total.

When the Sub-Total key is used, the Lower Counter does not shift since it is only desired to read the Itemizer.

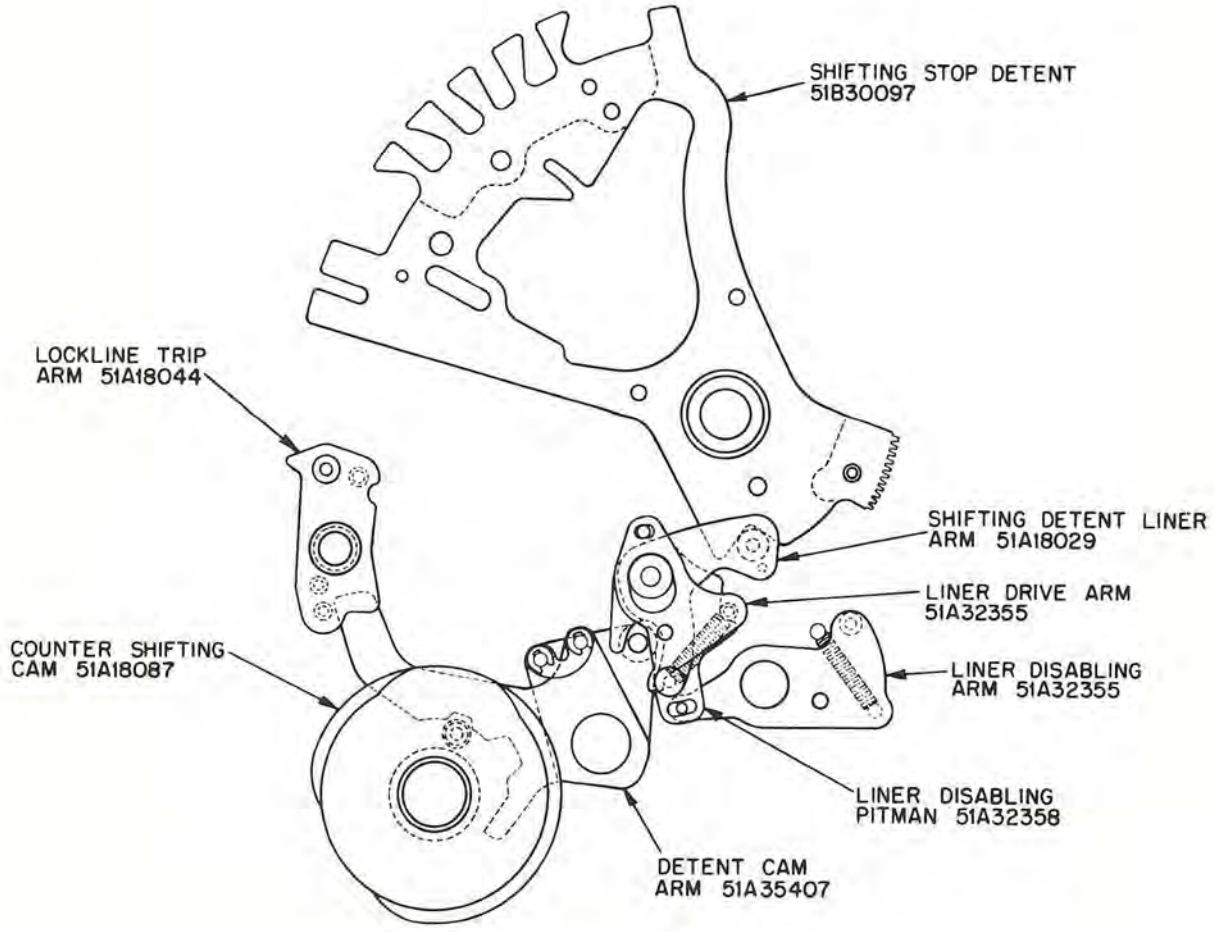
If one of the top four Total keys is used, the Counter will shift to the right at 5/8 T.O.H. and if one of the lower four Total keys is used, the Counter shifts to the left.

When one of the top four Total keys is pressed, the Mechanical Shift Detent 51C29942 will be cammed top to the back one position. The back of this Detent yokes a stud in the Counter Shifting Pitman Arm and will carry it bottom to the back.

A Roll on the Counter Shifting Pitman Arm works in a closed raceway of the Counter Shifting Pitman and will move this Pitman back one position placing a high part of the Pitman under the stud in the left Shifting Pitman Drive Arm.

There is a cut out spot at the top of the Pitman in the path of the stud in the Right Shifting Pitman Drive Arm.

HOMING MECHANISM
(C-52)



At 1/8 T.O.H. a roll on the Counter Shifting Cam will contact a high portion of the Detent Cam Arm carrying it up in front. A stud in the back of this Arm will contact the Liner Drive Arm 51A32355 and move it bottom to the back slightly. The bottom of the Drive Arm is against a stud in the Shifting Detent Liner Arm and will move the Liner Arm up in back slightly. This will force the Eccentric Roll on the Liner Arm into the "V" cut of the Shifting Stop Detent which insures that the Lower Counter is in the home position.

Immediately after 1/8 T.O.H. the Roll in the Counter Shifting Cam moves away from the Detent Cam Arm allowing it to move down in front to take the pressure off the Shifting Detent Liner Arm.

Just before 5/8 T.O.H. the stud in the Counter Shifting Cam will contact the lower extension of the Detent Cam Arm, moving it bottom to the back and top to the front.

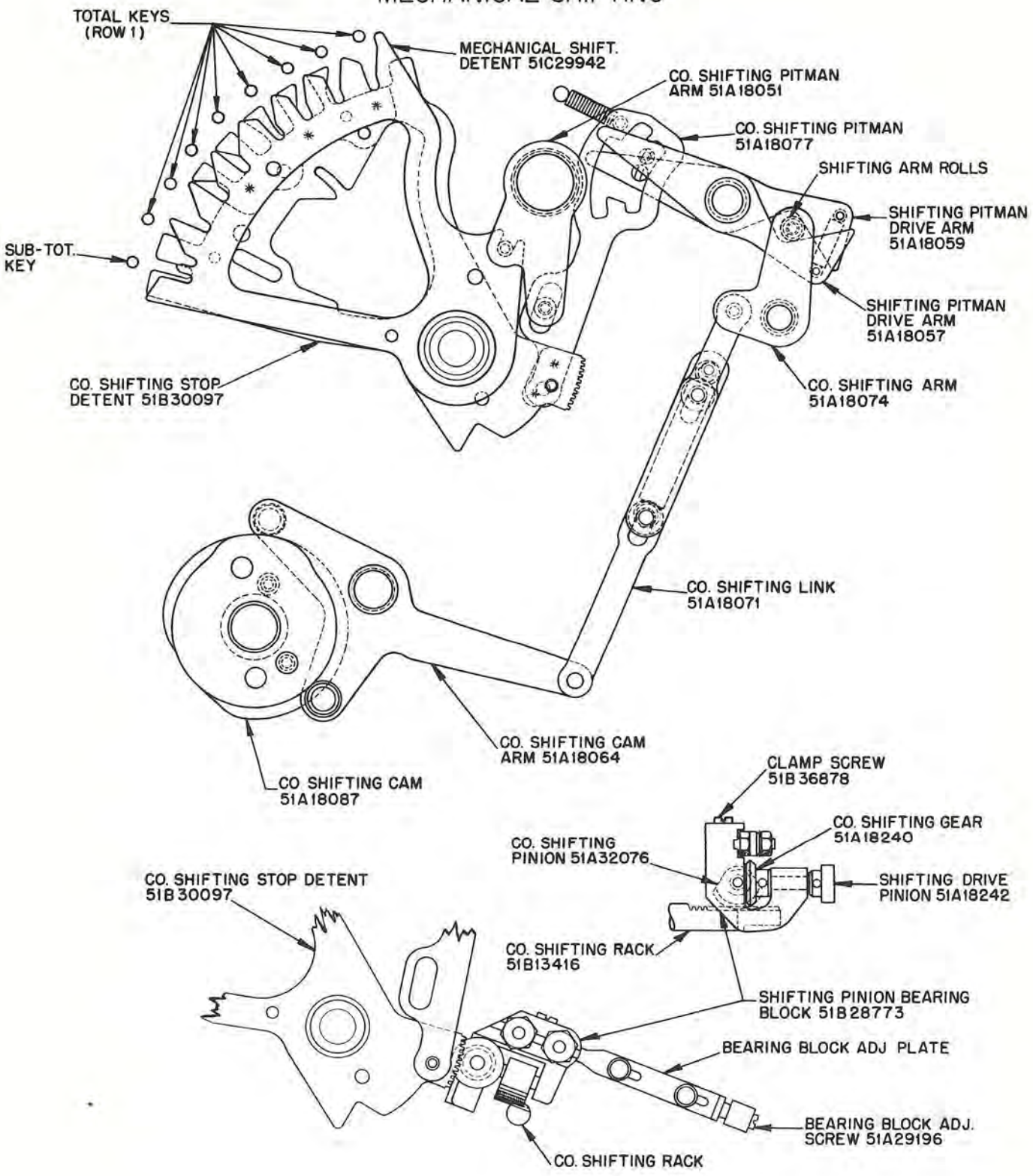
The stud in back of the Detent Cam Arm will contact the front extension of the Shifting Detent Liner Arm and carry it down in back out of the "V" cut in the Shifting Stop Detent. This is done to permit the Lower Counter to shift at 5/8 T.O.H.

At 5/8 T.O.H. a high part of the Counter Shifting Cam, which is a lead and follow cam, will move the Counter Shifting Cam Arm up in back and through the connections to the Counter Shifting Link, will move the Counter Shifting Arm top to the back.

The two Rolls on the Counter Shifting Arm will force the two Shifting Pitman Drive Arms apart at the back and front. As the left Drive Arm moves down in front, the stud will contact the step of the Counter Shifting Pitman moving it down.

The Shifting Pitman is connected to the Shifting Stop Detent and will carry it down in back and up in front. The teeth on the back of the Detent are in mesh with the Shifting Drive Pinion pinned to the Shifting Pinion Line. The Counter Shifting Gear pinned to the left end of the Shaft is in mesh with the Counter Shifting Pinion which in turn meshes with the Counter Shifting Rack.

MECHANICAL SHIFTING


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO SHIFTING CAM 51A18087
CLAMP SCREW 51B36878
CO. SHIFTING GEAR 51A18240
CO. SHIFTING PINION 51A32076
SHIFTING DRIVE PINION 51A18242
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING RACK 51B13416
SHIFTING PINION BEARING BLOCK 51B28773
BEARING BLOCK ADJ PLATE
BEARING BLOCK ADJ. SCREW 51A29196
CO. SHIFTING RACK

As the Counter Shifting Detent moves down, through the connections explained above, the Lower Counter will be shifted to the right. The Counter will continue to move to the right until stopped by, either a projection of the Counter Shifting Detent contacting the key pin, or if the top Total key is used, the counter is stopped by the Counter Shifting (Blade) Liner contacting the Counter Side Frame.

When this happens, the Shifting Detent, Lower Counter and Counter Shifting Pitman are stopped. Also, the left Shifting Pitman Drive Arm is stopped which will stop the Counter Shifting Arm.

Since the Counter Shifting Cam Arm is being driven positive, it will continue to move down in back and flex the spring between the upper and lower part of the Counter Shifting Link.

Just before 3/4 T.O.H. the Roll on the Counter Shifting Cam will move away from the bottom extension of the Detent Cam Arm and spring tension will restore the Shifting Detent Liner Arm up against the Shifting Stop Detent.

Between 1 T.O.H. and 1-1/4 T.O.H. the Counter Shifting Cam will reverse the movement of the Counter Shifting Cam Arm and carry the Counter Shifting Link down. The Counter Shifting Arm will be moved top to the front and spring tension will pull the two Shifting Pitman Drive Arms together, releasing the pressure on the Counter Shifting Pitman.

As this happens, spring tension on the Shifting Detent Liner Arm will restore the Shifting Stop Detent and Counter to their home position.

At 1-3/4 T.O.H. the Roll on the Counter Shifting Cam will contact the front camming surface of the Detent Cam Arm and raise it up. This will carry the Eccentric on the Shifting Detent Liner Arm into the "V" cut of the Shifting Stop Detent to insure the Counter is returned to the home position.

Just before the machine comes home, the Roll on the Counter Shifting Cam will move away from the high part of the Detent Cam Arm removing the positive pressure on the Shifting Detent Liner Arm.

When one of the Lower four Total keys is used, the Mechanical Shift Detent and Counter Shifting Pitman will receive a two position shift to the back, placing a high part of the Shifting Pitman in the path of the stud in the Right Shifting Pitman Drive Arm.

At 5/8 T.O.H. on this operation, the Right Shifting Pitman Drive Arm will contact the Counter Shifting Pitman and carry it up. This will reverse the movement through the Shifting Pinion Bearing Block and shift the Counter to the left. The Counter is again stopped by either a projection of the Shifting Stop Detent against a key pin or if the lower total key is used, the Counter Pinion Tube will contact the hub in the Counter Side Frame.

The Sub-Total key does not move the Mechanical Shift Detent and the Counter Shifting Pitman will remain to the front in its home position.

At 5/8 T.O.H. on this operation, the right and left Shifting Pitman Drive Arms will contact the Counter Shifting Pitman at the same time. This leaves the Counter in the home position to read the Itemizer.

READ ROW 1

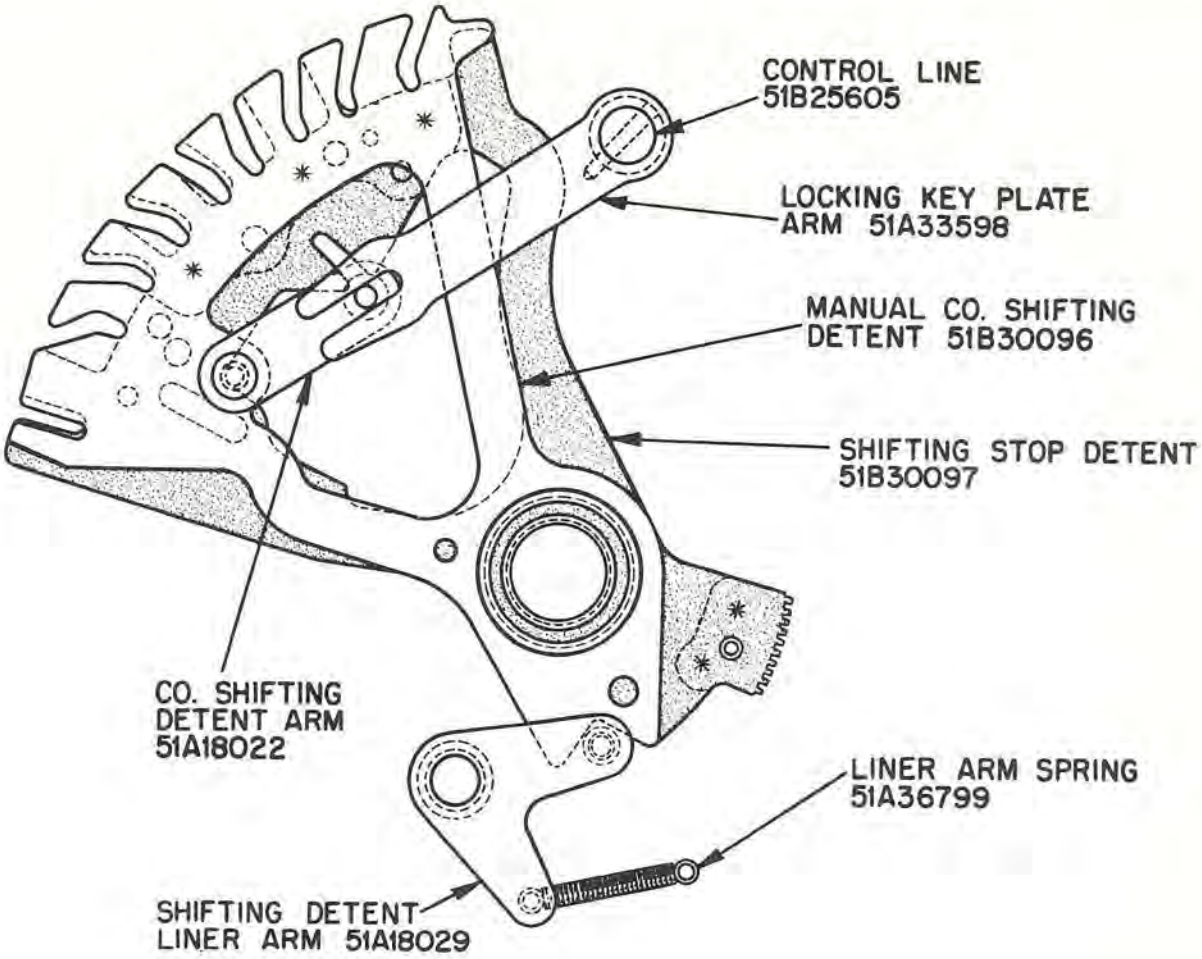
When the Unit Lock Lever is moved to the Read or Reset Row 1 position, the Control Line is turned top to the back. The Locking Key Plate Arm is set screwed to the right end of the line and will be carried up in front.

The Locking Key Plate Arm yokes the stud on the right side of the Counter Shifting Detent Arm and will carry this arm up. The long stud in the left side of the Counter Shifting Detent Arm will be carried up into a raceway of Shifting Stop Detent.

The Counter Shifting Detent Arm is swung on the Manual Counter Shifting Detent and with the stud in this arm in the raceway of the Shifting Stop Detent, the two Detents are bonded together.

When any Total key in Row 1 is used, the Counter will be shifted manually to the corresponding total.

Since the Counter is shifted as the key is pressed, the positive drive to the Shifting Detent Liner Arm must be disabled while the Unit Lock Lever is in Read or Reset Row 1.



When the Unit Lock Lever is moved to Read Row 1, the Counter Engaging Plate is moved bottom to the back. The bottom of the Engaging Plate will contact the stud in the back of the Liner Disabling Arm and carry it down in back and up in front. The small stud at the front of the Liner Disabling Arm is in the closed elongation of the Liner Disabling Pitman and will move the Pitman up.

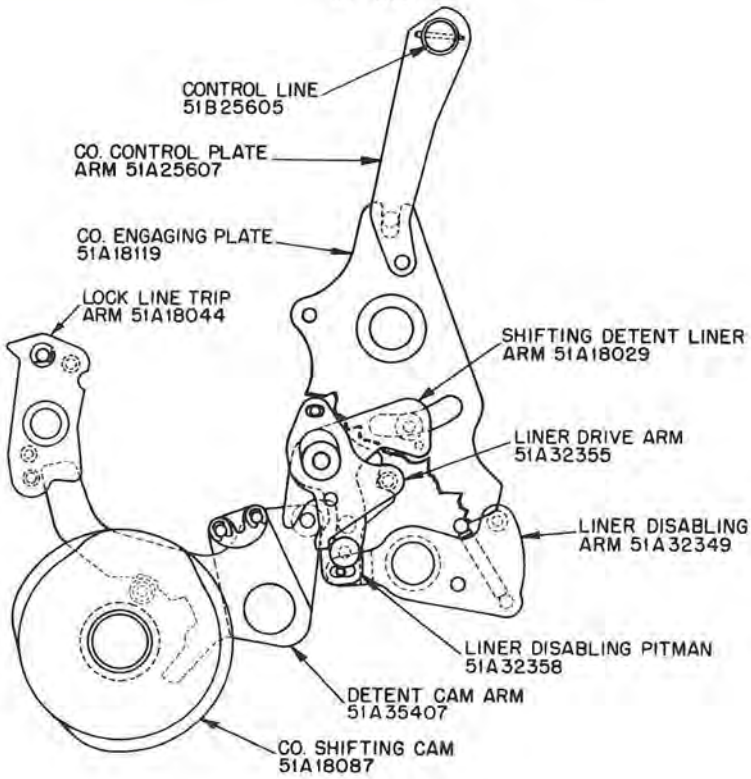
The Liner Disabling Pitman, Shifting Detent Liner Arm and Liner Drive Arm are all swung on the same stud located in the Right Side Frame. The Liner Disabling Pitman is swung to the left of the Shifting Detent Liner Arm and has a stud at the top that extends into an elongation at the top of the Liner Drive Arm.

Also, the Drive Arm Spring 51A37358 is connected between the Liner Disabling Pitman and Liner Drive Arm causing them to move together. The Shifting Detent Liner Arm is connected to the Liner Disabling Pitman by the spring stud at the bottom extending through the vertical elongation of the Disabling Pitman. As the Liner Disabling Pitman is carried up, the Liner Drive Arm will be carried up also, lifting the Lower Extension of the Drive Arm above the half round stud in the Shifting Detent Liner Arm.

HOMING MECHANISM

(UNIT LOCK LEVER IN READ ROW 1 POS.)

C-52



When the Detent Cam Arm moves top to the back at 1/16 T.O.H. and 1-3/4 T.O.H., the stud in this arm will contact the Liner Drive Arm and carry it bottom to the back. Since the Shifting Detent Liner Arm is being held down in back by the Shifting Stop Detent, it will prevent the Liner Disabling Pitman from moving and the Drive Arm spring between the Disabling Pitman and Liner Drive Arm will flex.

The Shifting Detent Liner Arm works with the Manual Counter Shifting Detent to restore it to the home position when the total keys are released.

REMOVAL OF COUNTER

1. Trip Machine, using sub-total key, and operate to 1/16 turn of the handle.

2. Remove Back Frame and brace for lower right corner of counter.

3. Mark and remove the two counter spacers between the left side frame and left counter frame.

4. Remove slip printer selecting line.

5. Remove clips from counter support shafts.

6. Remove counter support shaft that upper counter engaging arm is swung on. Unhook lower end of counter engaging link and remove upper counter engaging arm.

7. Remove spring clips from the following:

   (a) Transfer Pawl Control Yoke Arm
   (b) Transmission Liner Arm (both ends)
   (c) Indicator Liner Arm (both ends)
   (d) Indicator Liner Link (top of link)
   (e) Transfer Restoring Link
   (f) Counter Liner Link

8. Remove large Support Shaft through right side frame.

9. Remove short Counter Support Shaft through right side.

10. Unhook Counter Shifting Link (mechanical shift) at top and move link top to the back.

11. Disengage Counter Engaging Arm for lower counter and move top to the back.

12. Hold Counter and remove upper Support Shaft.

13. Move Counter to the back to disengage Shifting Pinion Bearing blocks from detents. Move Counter toward right side frame to allow the two Liner Blade Guide Screws to clear left side frame. Now move Counter Straight to the back to remove.

REMOVAL OF UPPER PINION LINE

1. Restore all transfers.

2. Remove Bearing Block Assembly.

3. Remove Guide Plate.

4. Remove the nut on the left end of the Counter Shaft and take the Liner Blade off.

5. Turn the Counter Pinion Shaft until the Counter Shifting Rack can be removed from the right side.

6. Restore all transfers and lift the Pinion Line up on the right side and remove.

REPLACING UPPER PINION LINE

1. Restore all Transfers.

2. Line up long teeth and replace Pinion Line with the long teeth up.

3. Place left end of Pinion Line in position and rotate pinions until they line up with the stationary liner. As the liners line up with the stationary liner, the Pinion Line will drop into position.

4. Install the Counter Shifting Rack and turn the Tube Shaft until the Rack is all the way in.

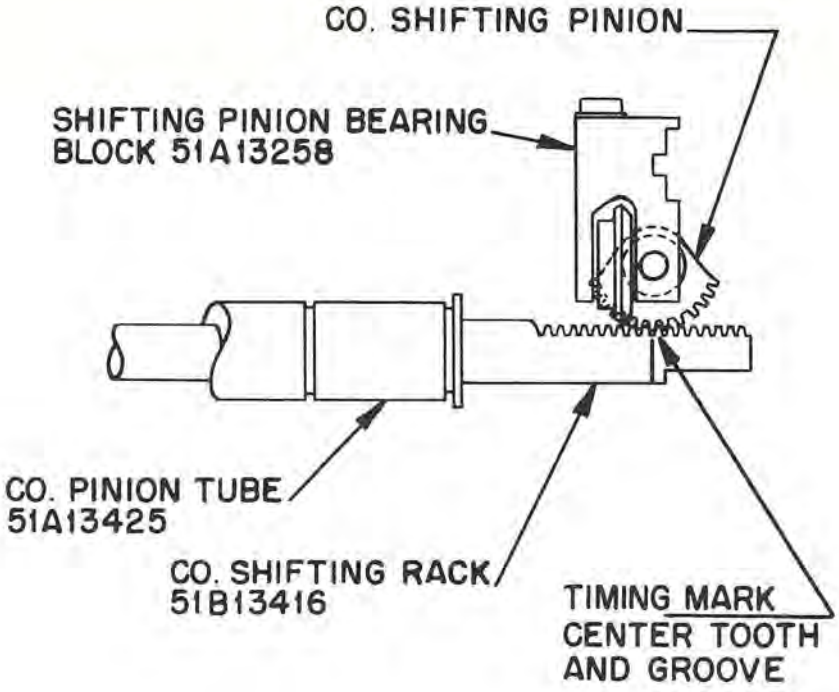
5. Replace the Liner Blade, Rack Guide Plate and Liner Blade Guide Screw and check for freedom.

COUNTER SHIFTING ADJUSTMENTS

UPPER COUNTER ADJUSTMENTS - COUNTER OUT OF MACHINE

1. With the Shifting Pinion Bearing Block off, the Counter must shift free.

2. Check the Counter Shifting Pinion for end play on the Shifting Pinion Shaft. End play must not exceed .005". To adjust, use either the Consecutive Number Carrying Pawl Washer 900A38171 (.005) or Bearing Block Washer 51A37431 (.003). If there is wear on the Pinions in the Bearing Block replace the Pinions.

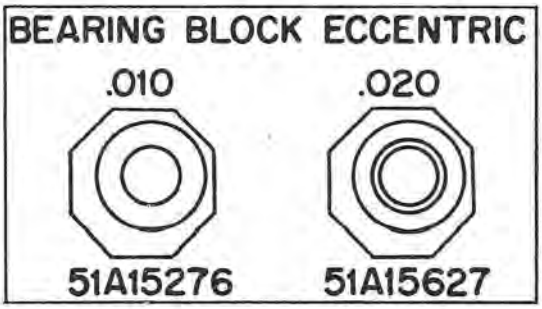

CO. SHIFTING PINION
SHIFTING PINION BEARING BLOCK 51A13258
CO. PINION TUBE 51A13425
CO. SHIFTING RACK 51B13416
TIMING MARK CENTER TOOTH AND GROOVE

3. Replace Shifting Pinion Bearing Block and time the Counter Shifting Pinion with the Counter Shifting Rack. Groove on Counter Shifting Rack in line with center tooth of Counter Shifting Pinion.

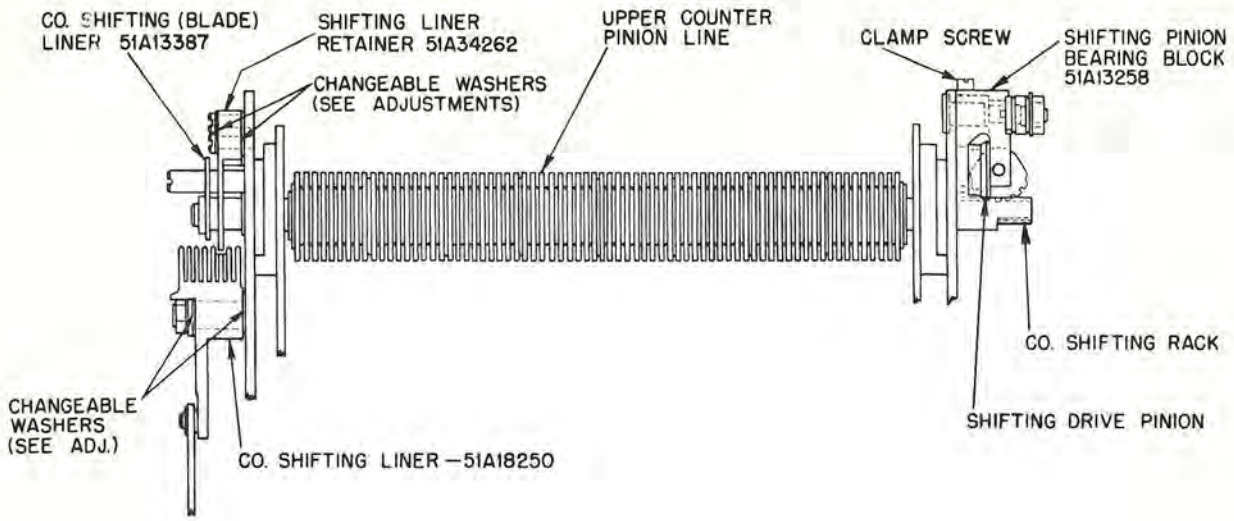
4. Install Eccentrics on the Studs with the high sides up. Adjust the Eccentrics by turning them the same number of positions in the same direction. Turn the Eccentrics until the Counter Shifting Pinion meshes with the Counter Shifting Rack as deep as possible with no binds.

5. The Eccentrics come in sizes .010" and .020". Always use them in pairs of the same size. Check for binds counter in and out of mesh.

6. Back off the Adjusting Screw for the Bearing Block Adjusting Plate and move the Shifting Pinion Bearing Block all the way to the back. Tighten the Clamp Screw 51A36878 just tight enough to take the play out of the Bearing Block. Replace the nuts on the two studs and tighten finger tight.



UPPER COUNTER
(C-52)



7. Shift the Counter Pinion Tube all the way to the right. The last Pinion in each group should be aligned with the Transfer Pawl Slot.

   To adjust, install spacers on the hub of the Counter Shifting (Blade) Liner.

   Use Washers listed below.

51A14289	Counter Pinion Liner Washer	.005
51A14290	Counter Pinion Liner Washer	.010

   With the Counter in this position engage the Counter Shifting Liner. The Counter should be held snug.

   To adjust the liner, use washers listed below:

800A255	Counter Spacing Washer
2000A25209	Slip Feed Stud Washer
2000A44759	Elmination Pawl Control Stud Washer

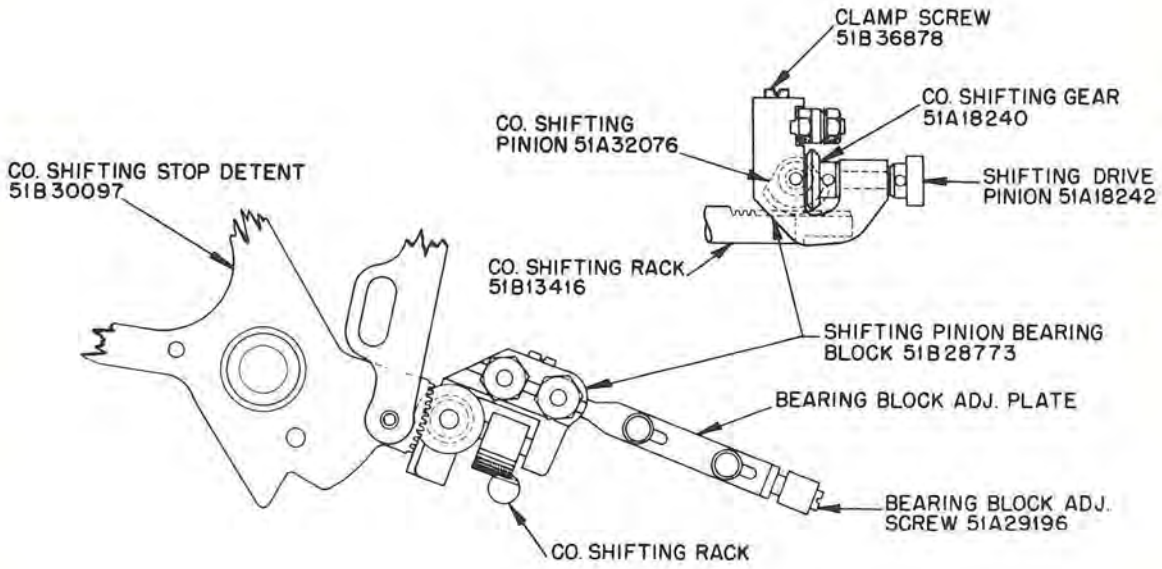
8. If the adjustment of the Counter Shifting Liner 51A18250 is changed, the Shifting Liner Retainer 51A34262 will also have to be adjusted.

   Use Washers listed below to make this adjustment:

900A3871	Consecutive Number Carrying Pawl Washer	.005.
51A37413	Bearing Block Washer	.003.
51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	
5000A33499	Paper Frame Stud Washer	.010.

9. With the Liner Blade in the fifth slot, from the left, of the Counter Shifting Liner 51A18250, turn the Pinion Tube Shaft until the Counter Shifting Rack groove and center tooth of the Counter Shifting Pinion are in alignment.

10. Counter is ready to be installed.

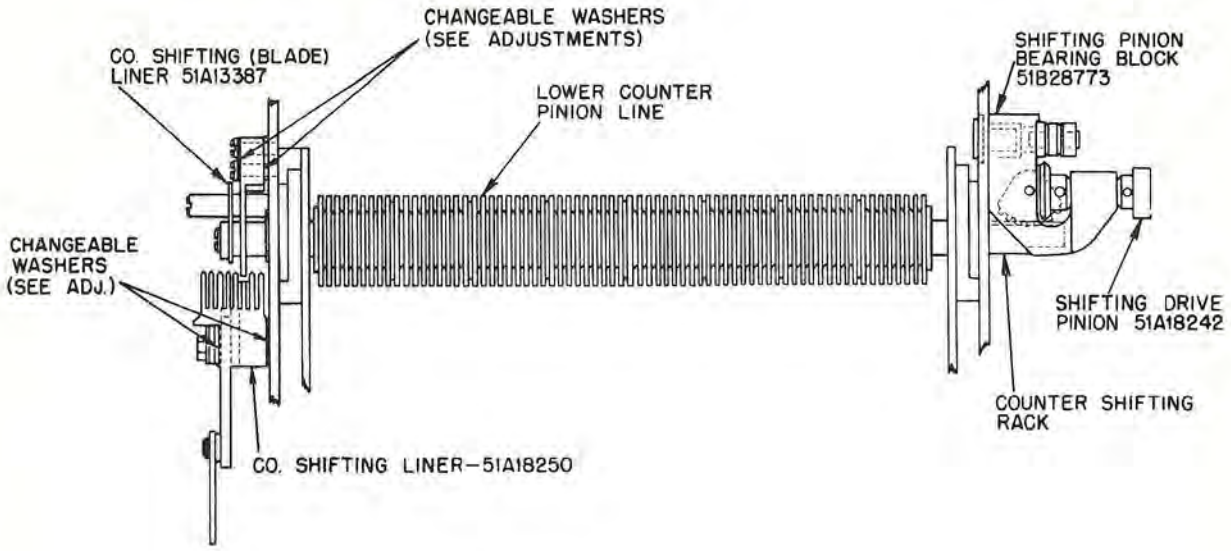


LOWER COUNTER ADJUSTMENT - COUNTER OUT OF MACHINE

1. The Pinion Tube must shift free with Shifting Pinion Bearing Block removed.

2. The Counter Shifting Pinion must not have more than .005 end play. To adjust, use Washers listed below:

900A3871	Consecutive Number Carrying Pawl Washer	.005.
51A37413	Bearing Block Washer	.003.
51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	
5000A33499	Paper Frame Stud Washer	.010.



The Shifting Pinion Line should be washered for a maximum of .005 end play to the right. To adjust, remove dowl pin from the Counter Shifting Gear and move Shifting Pinion Line to the right. Be extremely careful when driving this dowl pin or the Shifting Pinion Line will be bowed causing a bind. Use washers listed for adjusting end play:

51A37414	Bearing Block Washer	.003.
100A2236	Indicator Spacing Washer	.005.
5000A33499	Paper Frame Stud Washer	.010.

3. Replace Shifting Pinion Bearing Block and time with Counter Shifting Rack. Groove on Counter Shifting Rack in line with center tooth of Counter Shifting Pinion.

4. Install Eccentric on studs with high side up. To adjust Eccentrics and Liners, follow instructions of steps 4, 5, 6, 7 and 8 of Upper Counter.

5. Shift Counter all the way to the left. The last Pinion on the right of each Pinion Group should be aligned with the Transfer Pawl Slots. As must as .020 draw to the right is permitted as the Counter Shifting Liner is engaged. No draw is permitted to the left since the Counter Shifting Liner would be forcing the Counter against the Stop and parts would be strained.

To adjust for draw, change the Counter Shifting Stop. There are two stops available at the present time for this adjustment.

51A36011	Counter Shifting Stop	.068
51A36877	Counter Shifting Stop	.048

In order to change the Counter Shifting Stop the Lower Counter Pinion Tube will have to be removed.

6. With the Liner Blade in the fifth slot, from the left, of the Counter Shifting Liner 51A18250, turn the Counter Pinion Shaft until the Counter Shifting Rack Groove and center tooth of the Counter Shifting Pinion are in alignment.

7. Counter is ready to be installed.

INSTALLATION OF COUNTER

1. Press Sub-Total Key and operate to 1/16 T.O.H.

2. Install Counter in machine and work Lower Counter Engaging Arm into position.

3. By reversing removal procedure, completely install Counter with the exception of the Upper Support Shaft.

4. Shift Upper Counter and Lower Counters so the Copper colored Pinions are aligned with the Transfer Pawl slots and operate machine, until Counter Shifting Liners are engaged.

5. Adjusting each Counter separately, loosen the Clamp Screw and nuts that hold the Shifting Pinion Bearing Block. Use finger and push Shifting Pinion Bearing Block to the front until it is tight in mesh with the teeth of the Counter Shifting Detent (Upper Counter) and Shifting Stop Detent (Lower Counter).

6. Turn Adjusting Screw Until the Bearing Block Adjusting Plate just touches the Shifting Pinion Bearing Block.

7. Tighten the Clamp Screw just tight enough for the Lock Washer to prevent the screw backing out.

8. Tighten Lock Nuts that hold the Counter Shifting Bearing Block in place.

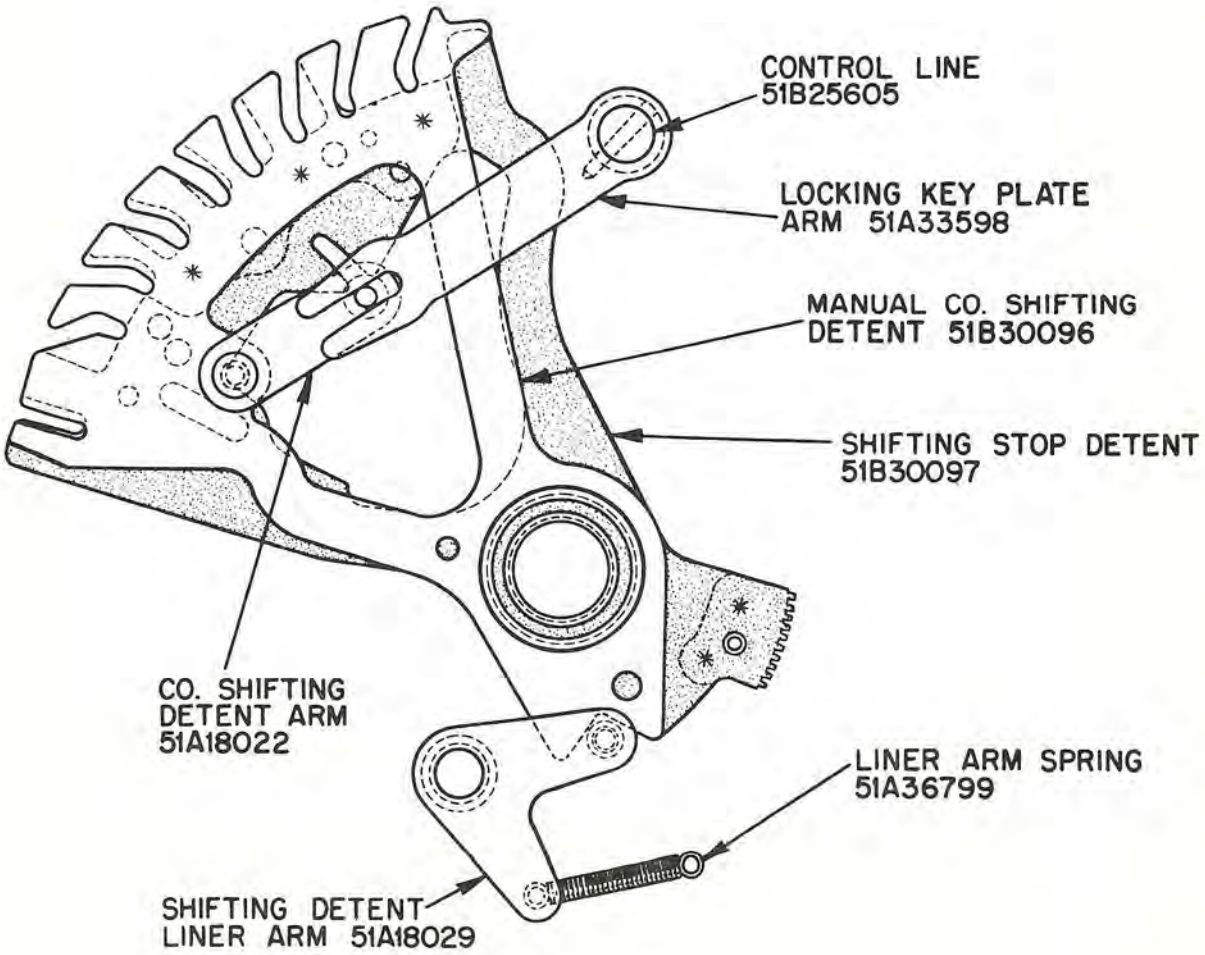
9. Replace Upper Counter Support Shaft and operate Machine home.

10. With the Keybanks removed, shift the Counters to their extreme positions each way and they must restore by spring tension.

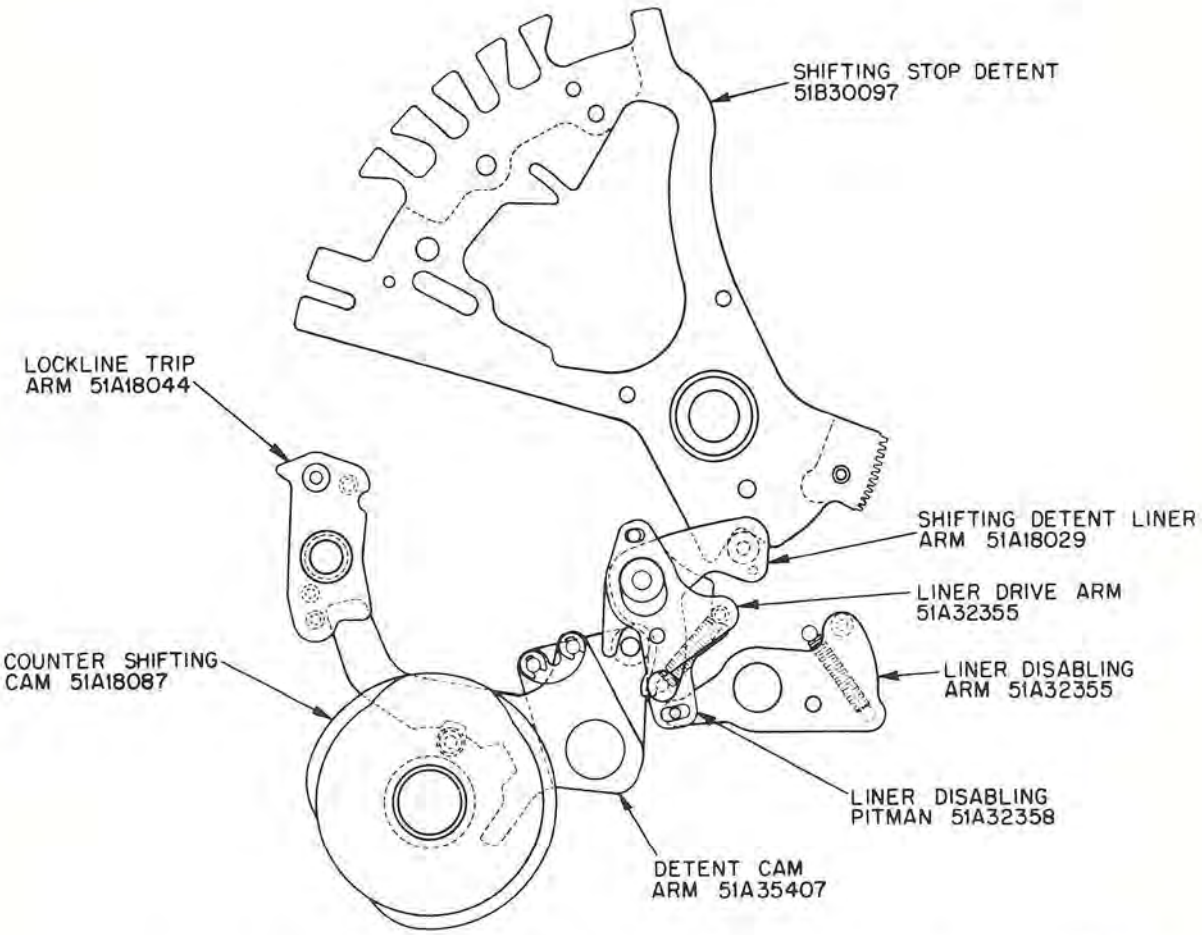
UPPER COUNTER DRAW ADJUSTMENT - COUNTER IN MACHINE

1. Press bottom key in Row 2 and operate machine until Counter Shifting Liners are engaged. There should be no draw to the Counter at this time. Adjust by turning the Counter Tube Shaft. Next, check each key in Row 2. If there is excessive draw in any of these positions (more than .020) readjust the Counter Tube Shaft. Again, check draw with the Lower Key in Row 2 to see that it is still within the .020 limit.

NOTE: If a draw adjustment is required in either counter, the Slip Printer will have to be removed.



1. Remove Transaction Keybank and move the Unit Lock Lever to read Row 1. The long stud in the Counter Shifting Detent Arm must enter the raceway in the Counter Shifting Stop Detent without camming the detent in either direction. To adjust for this condition, use the Eccentric in the Shifting Detent Liner Arm.



2. With U. L. L. in Register Position, operate machine to 1/16 T. O. H. and stop when the Detent Cam Arm has received its full movement up in front by the roll on the Counter Shifting Cam. At this time, check the Counter Shifting Stop Detent for being snug.

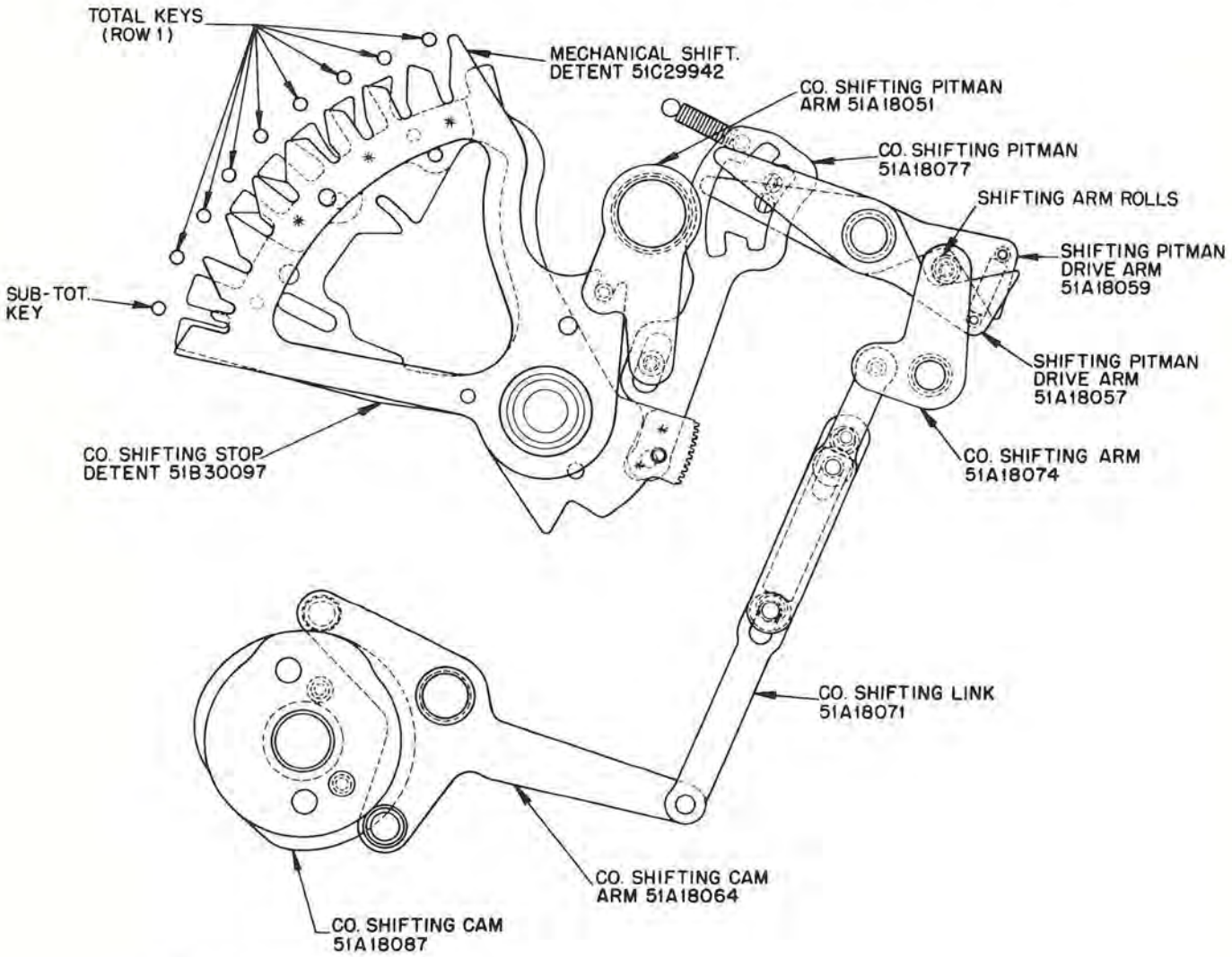
   This adjustment is obtained by changing the roll on the Counter Shifting Cam Arm.

51A33158	Cam Arm Roll	.250
51A33159	Cam Arm Roll	.260
51A33160	Cam Arm Roll	.270
51A33161	Cam Arm Roll	.280
51A33162	Cam Arm Roll	.290

Caution: When making this adjustment, use only as large a roll as is required to take the play out of the Counter Shifting Stop Detent. If a Larger roll than necessary is used, the small stud in the top of the Liner Disabling Pitman could be broken out when reading or resetting Row 1.

3. Operate machine until the Keylock Line has restored to the point of maximum lead (1-3/4T.O.H.). Set Eccentric on Keylock Line Arm to just touch the Detent Cam Arm without any pressure.

Too much adjustment at this point would damage the Detent Cam Arm.


TOTAL KEYS (ROW 1)
MECHANICAL SHIFT. DETENT 51C29942
CO. SHIFTING PITMAN ARM 51A18051
CO. SHIFTING PITMAN 51A18077
SHIFTING ARM ROLLS
SHIFTING PITMAN DRIVE ARM 51A18059
SUB-TOT. KEY
SHIFTING PITMAN DRIVE ARM 51A18057
CO. SHIFTING STOP DETENT 51B30097
CO. SHIFTING ARM 51A18074
CO. SHIFTING LINK 51A18071
CO. SHIFTING CAM ARM 51A18064
CO. SHIFTING CAM 51A18087

DRAW ADJUSTMENT

1. Make a manual Sub-Total operation and as the Counter engages at 1/8 T.O.H. there should be no draw to the counter.

To adjust, loosen lock nut on Counter Shifting Plate Liner and turn Pinion Tube Shaft in direction necessary to overcome draw.

2. Continue operation to 5/8 turn of the handle. The Shifting Pitman Drive Arms should not move the Counter at this time.

If the counter is being shifted slightly to the left at this time, change the Shifting Arm Roll that drives the right Shifting Pitman Drive Arm.

If the Counter is being shifted to the right, change the Shifting Arm Roll for the left Shifting Pitman Drive Arm.

The available rolls are listed below:

51A18079	Shifting Arm Roll	.327
51A18079	Shifting Arm Roll	.342
51A18080	Shifting Arm Roll	.312
51A18081	Shifting Arm Roll	.357
51A18082	Shifting Arm Roll	.372

In the event one of the Shifting Arm Rolls are changed, the following should be checked.

Operate machine, first with the top Total Key and then with the lower Total Key, and the spring on the Counter Shifting Link 51A18071 should flex after the lower Counter has shifted. This insures that the Counter will be shifted to the extreme Totals in each Pinion Group.

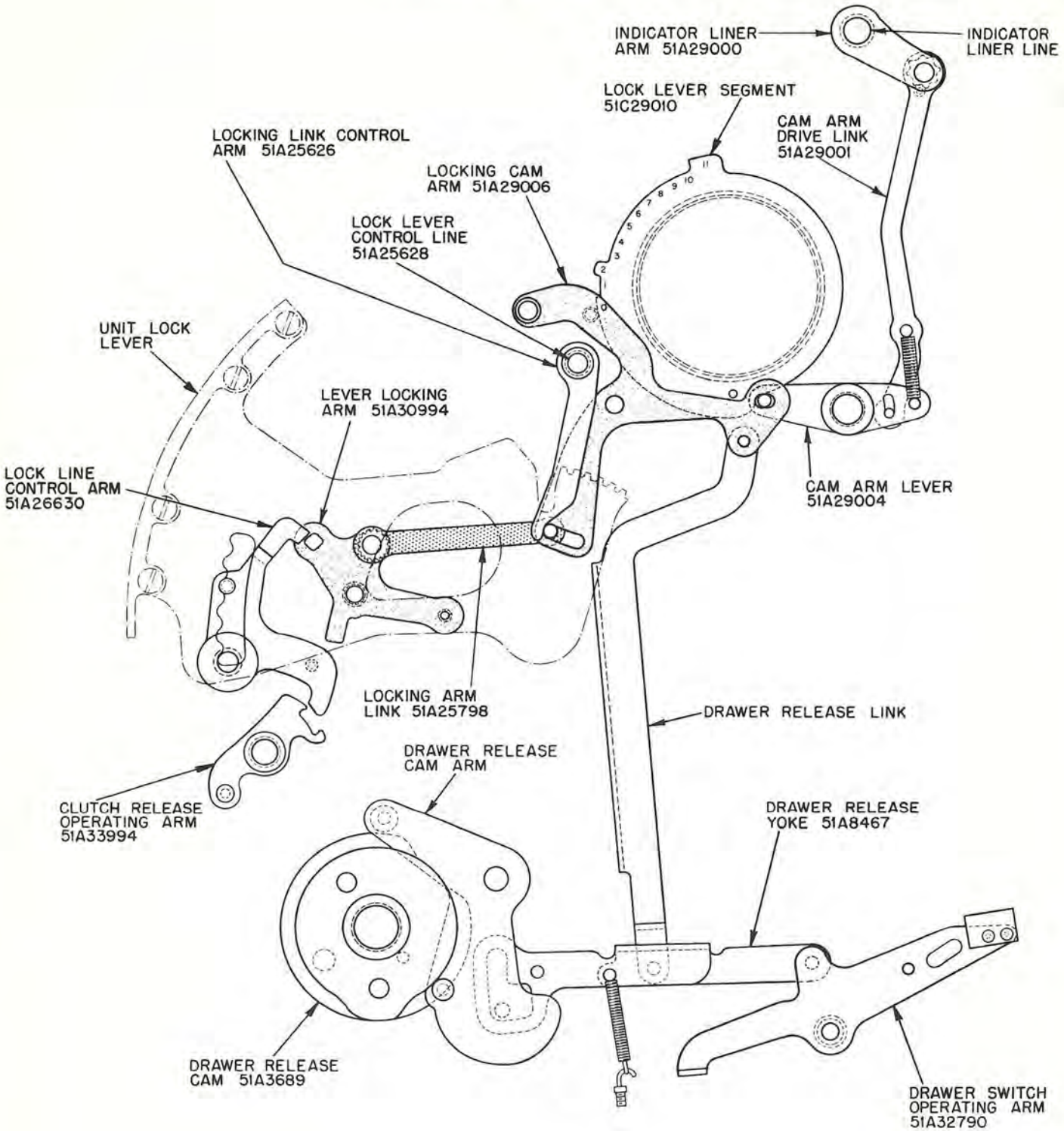
3. Operate with each Total Key and check draw at 3/4 T.O.H. Make a note of amount and direction draw.

4. Move Unit Lock Lever to Read Row 1 and again operate with each Total key checking draw at 1/8 T.O.H. Note the amount and direction of draw.

5. The greatest amount of draw will occur with the U.L.L. in the Read or Reset Row 1 position. When using the top Total Keys, the Counter will normally draw right at 1/8 T.O.H. and the Bottom keys will cause the Counter to draw to the left.

By turning the Pinion Tube Shaft, adjust to equalize the draw between the two keys that have the greatest amount of opposite draw (less than .035 permitted). After making this adjustment, again check the item position of the Counter for draw to see that it is not excessive.

DRAWER CONTROL (C-52)


INDICATOR LINER ARM 51A29000
INDICATOR LINER LINE
LOCK LEVER SEGMENT 51C29010
CAM ARM DRIVE LINK 51A29001
LOCKING LINK CONTROL ARM 51A25626
LOCKING CAM ARM 51A29006
LOCK LEVER CONTROL LINE 51A25628
UNIT LOCK LEVER
LEVER LOCKING ARM 51A30994
LOCK LINE CONTROL ARM 51A26630
CAM ARM LEVER 51A29004
LOCKING ARM LINK 51A25798
DRAWER RELEASE LINK
DRAWER RELEASE CAM ARM
CLUTCH RELEASE OPERATING ARM 51A33994
DRAWER RELEASE YOKE 51A8467
DRAWER RELEASE CAM 51A3689
DRAWER SWITCH OPERATING ARM 51A32790

LOCK LEVER SEGMENT 51C29010

The Lock Lever Segment 51C29010 controls the Unit Lock Lever, Drawer Operating and Bell Ringing Mechanism. Row 1 controls the position that the Lock Lever Segment will be stopped.

At 1/16 turn of the handle, on an Item Operation, the Indicator Liner Line is turned top to the back and will carry the Indicator Liner Arm 51A29000 down in back. Through the connections to the Cam Arm Drive Line 51A29001 and Cam Arm Lever 51A29004, the Locking Cam Arm will be moved top to the front. This will take the stud in the Locking Cam Arm away from the surface of the Lock Lever Segment 51C29010 allowing the Segment to be positioned.

As the bottom of the Lock Cam Arm moves back, it will carry the Locking Arm Link 51A25798 back and turn the Lever Locking Arm top to the back. The stud in the Locking Lever Arm will move into the path of the Lock Line Control Arm preventing it being moved which will lock the Unit Lock Lever.

The back of the Locking Cam Arm is connected to the Drawer Release Link and will raise this link up. The Drawer Release Link is connected to the Drawer Release Yoke and will raise it up in front placing the wide portion of the raceway around the stud in the Drawer Release Cam Arm disabling Drawer release.

When the Indicator Liner Arm receives reverse movement, spring tension will carry the Locking Cam Arm top to the back until the stud contacts the high surface of the zero position on the Lock Lever Segment.

This will stop the Locking Cam Arm, Locking Arm Link and Lever Locking Arm, leaving the stud in the Lever Locking Arm in the path of the Lock Lever Control Arm.

In this position, the Unit Lock Lever is locked and the Drawer Release Yoke 51A8467 is held up in the disabled position.

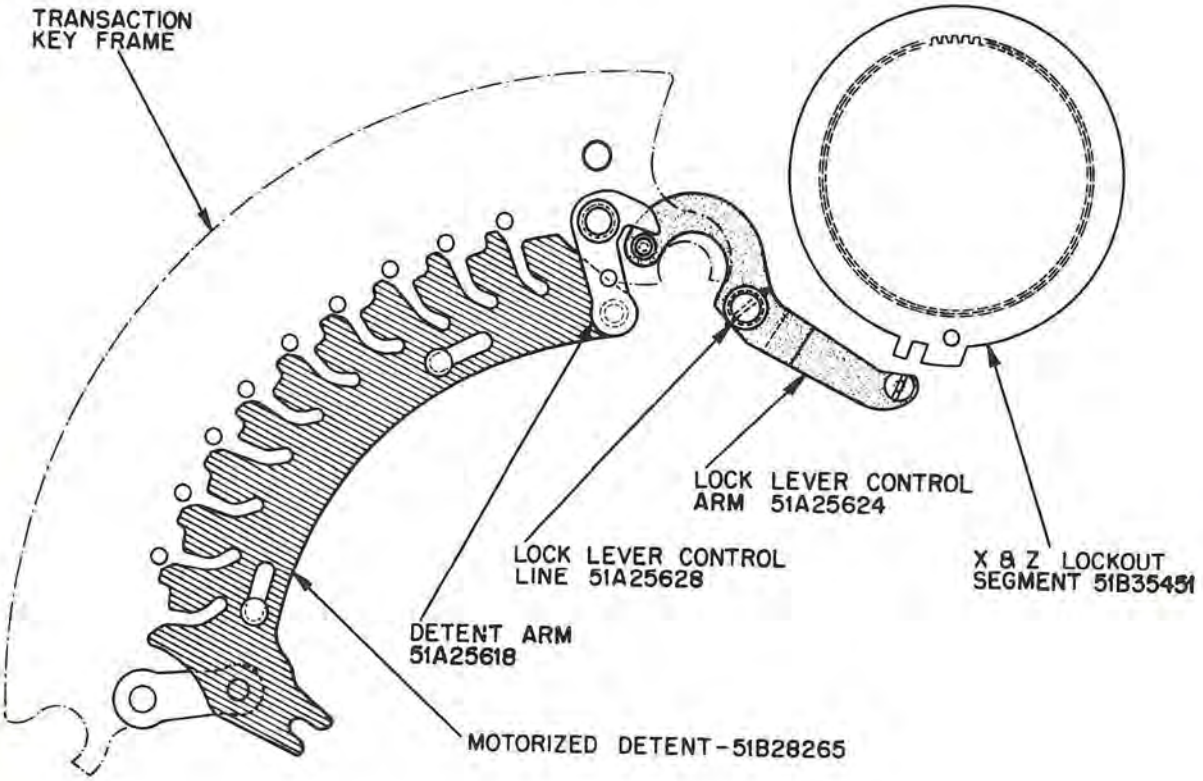
When a Sub-Total Operation is made, the #2 position of the Lock Lever Segment is placed in the path of the Locking Cam Arm, which will continue to lock the Unit Lock Lever and disable Drawer opening.

When a Total key is used, the Lock Lever Segment will be stopped in one of the positions 3 through 10. These positions are all low which will allow the Locking Cam Arm to receive enough movement top to the back to unlock the Unit Lock Lever and able Drawer release.

If the machine is operated with the Unit Lock Lever in the Read or Reset Row 2 position, the Row 1 Differential Segment is stopped in the first position by the 2 and 11 Segment stop. This will position the Lock Lever Segment 51C29010 to the 1st position which is a medium surface.

This surface of the Lock Lever Segment will allow enough movement to the Locking Cam Arm, top to the back, to unlock the Unit Lock Lever but will disable Drawer release.

U.L.L. CONTROL-(C-52)


TRANSACTION KEY FRAME
LOCK LEVER CONTROL ARM 51A25624
LOCK LEVER CONTROL LINE 51A25628
X & Z LOCKOUT SEGMENT 51B35451
DETENT ARM 51A25618
MOTORIZED DETENT-51B28265

Whenever a key in Row 1 or 2 is used, the Motorized Detent 51B28265 will be cammed down. This turns the Detent Arm 51A25618 top to the back and the extension on this arm will contact the Roll on the Lock Lever Control Arm carrying it down in front and turn the Lock Lever Control Line top to the front.

The Locking Link Control Arm 51A25626 pinned to the left end of this line, will move bottom to the back and carrying the Locking Arm Link 51A25798 back.

This link will turn the Lever Locking Arm top to the back preventing the Unit Lock Lever from being moved until the Key is released.

When the Unit Lock Lever is moved to the Lock Register Position, a high part of the X and Z Lockout Segment 51B35451 is moved in the path of the stud on the back of the Lock Lever Control Arm 51A25624. This prevents fully depressing the Row 1 or 2 keys.

ADJUSTMENT

The Eccentric in the Indicator Liner Arm 51A2900 should be adjusted to give clearance between the stud in the Locking Cam Arm and high surface of the Lock Lever Segment when the Indicator Liner Arm has received its full movement down in back (home to 1/8 turn of the handle).

Adjust the eccentric in the liner locking arm for .035 clearance between the stud in this arm and the Lock Line Control Arm, with the stud in the Locking Cam Arm against the medium surface of the Lock Lever Segment.

After making this adjustment, check to see that the stud in the Lever Locking Arm is in the path of the Lock Line Control Arm after an Item Operation and also when a Row 1 or 2 key is pressed.

TRANSACTION COUNTERS

The Transaction Counters C-52 are of a new design built into a single unit that is easily removed and replaced. The unit consists of two counter lines and the upper counter line consists of a 3-wheel counter for each department, a 4-wheel Reset Counter, and a 2-wheel Item Counter, which is easily identified by the peculiar color of the wheels.

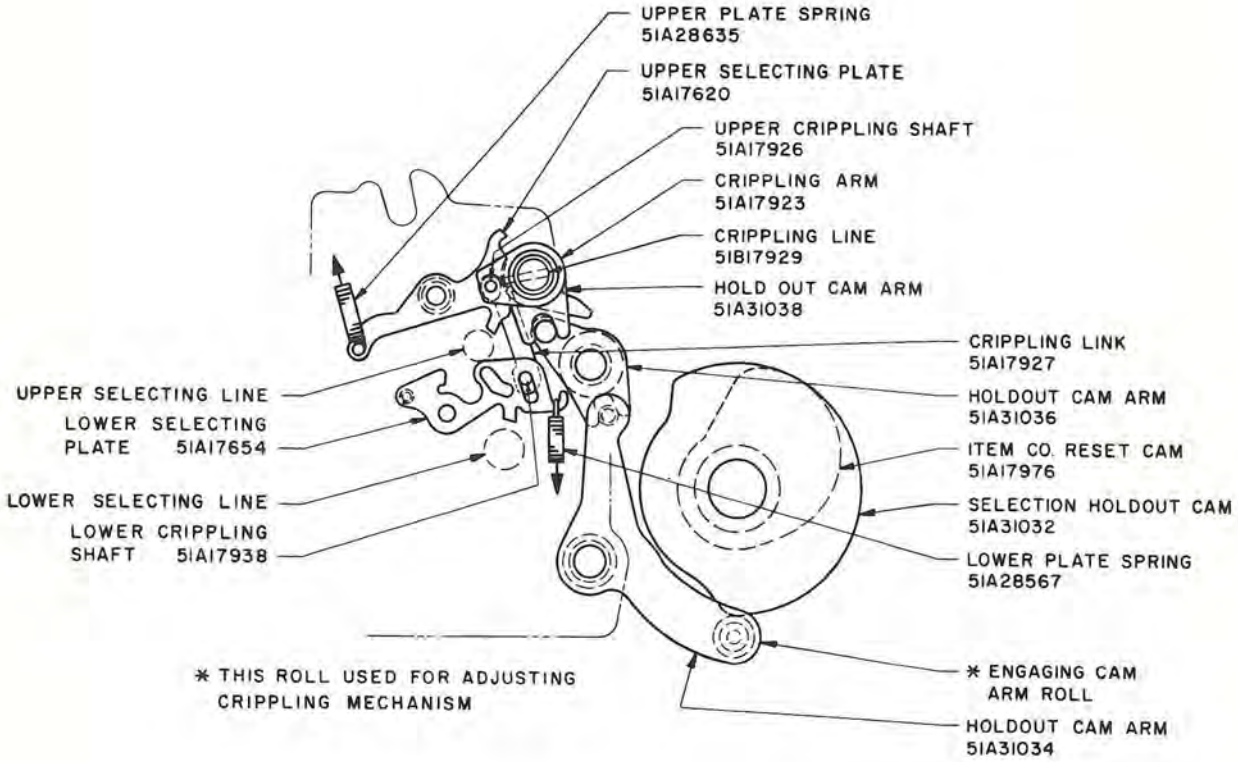
The lower special counter line consists of a 4-wheel counter for the Customer count and a 3-wheel counter for a No Sale count.

All department counters except the Coupon and Refund advance only once in a sequence of operation. The Coupon and Refund advance each and every time their corresponding key is used. The Item Counter is used to count the number of items in a sequence of operation. It is reset on the first operation following a Change-Balance Due operation. In the event the first operation following the Change-Balance Due is an item operation, the counter will be reset to zero and advanced one. If the first operation is another Change-Balance Due operation, the item counter will be reset to zero.

The customer counter advances on a Change-Balance Due operation and if it is followed by another Change-Balance Due operation it will be disabled and the No Sale counter advanced.

The Reset Counter adds on the first "Read Group", "Reset Row 2 +" or "Reset Row 2" - operation. It is reset along with the Department counters whenever the Item Counter is reset the first time following one of the above operations.

SPECIAL CO. CRIPPLING U.L.L. IN REGISTER
(C-52)



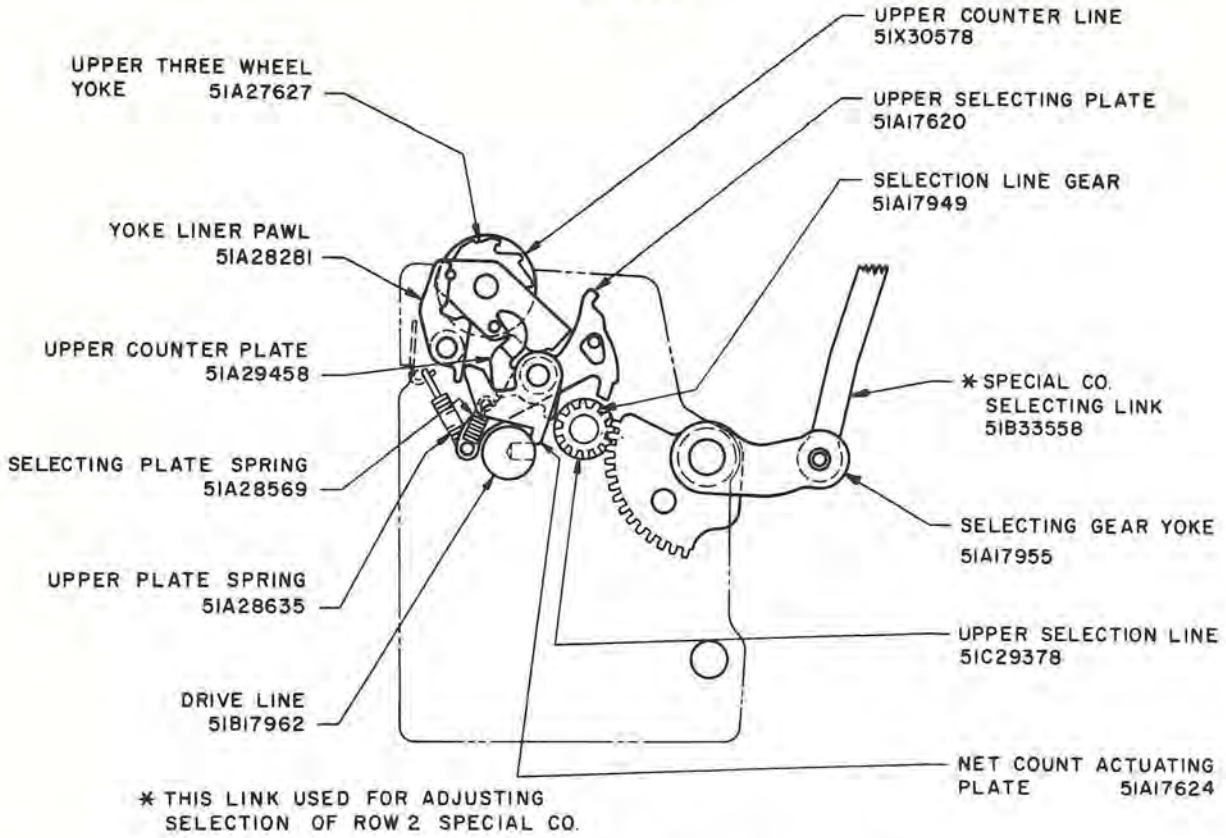
ROW 2 SPECIAL COUNTERS

In the home position, the high portion of the Reset Cam is over the roll and stud in the Hold-Out Cam Arm, holding the Upper and Lower Crippling Shafts up, which in turn holds the Upper and Lower Selecting Plates top to the front. In this position the "tails" of these Plates are held above the Selection Lines.

Between 1/8 and 3/8 turns of the handle, the Row 2 Indicator Segment is carried top to the back, to the zero position. The Special Counter Selecting Link, which is connected to the Segment, is carried up and will turn the Selecting Gear Yoke all the way top to the front.

Between 3/4 and 1-1/8 turns of the handle, the Row 2 Indicator Segment is carried back down to a position corresponding to the key in Row 2 that has been depressed. The Selecting Gear Yoke will be turned top to the back, and being in mesh with the Selecting Line Gear which is pinned to the Selection Shaft will turn it and the Shaft top to the front.

ROW 2 SPECIAL CO. SELECTION
(C-52)

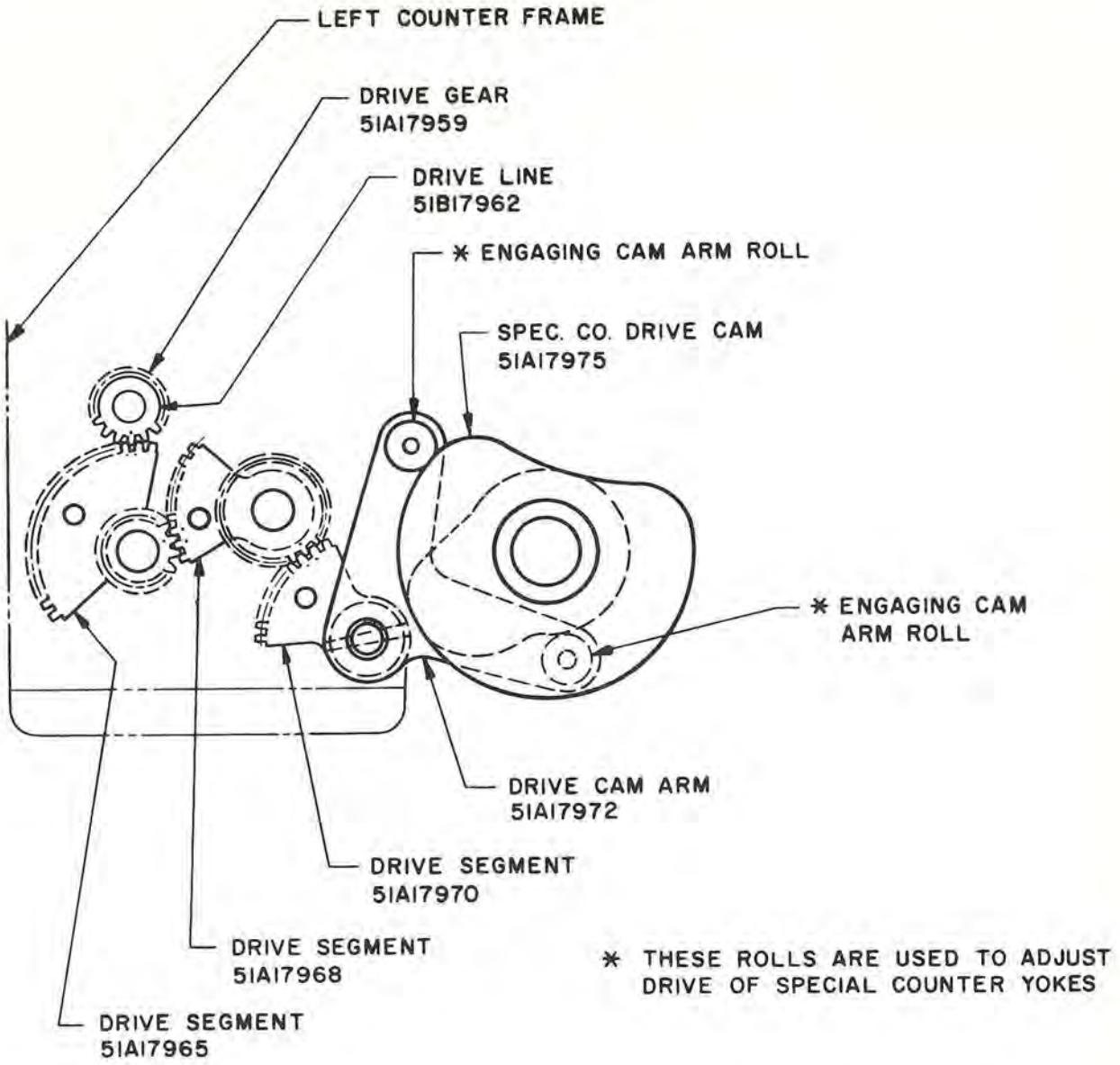


There is a series of dwells drilled into the Selection Line that correspond to the Key positions of Row 2. These dwells work with the "tails" of the Selecting Plates for each Special Counter.

When the Row 2 Indicator Segment is positioned corresponding to the Key depressed, the Selection Line is turned until a dwell is directly under the "tail" of the Selecting Plate for the Special Counter which corresponds to the Key.

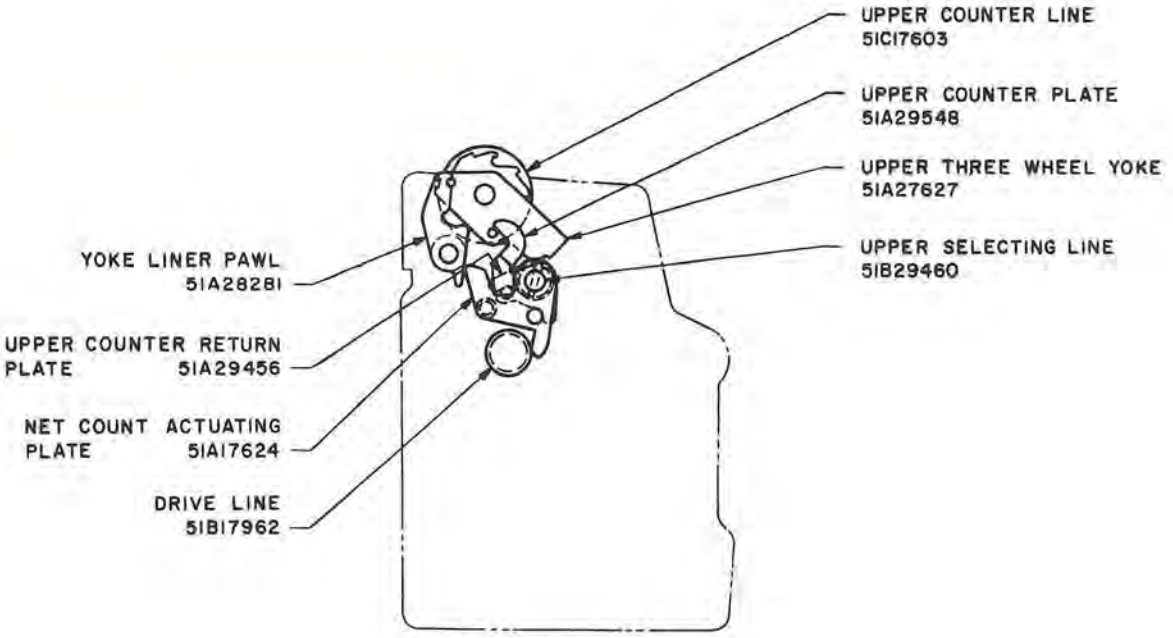
At 1-1/4 turn of the handle, the low part of the Reset Cam will be moved over the roll and stud in the Hold-Out Cam Arm, allowing it to move up. The Upper and Lower Crippling Shafts will move down and allow the "tails" of the Selection Plates to move down and sense for the dwells in the Selection Line.

The Selection Plates which do not have a dwell in the Selection Line under the "tail" will come down against the Selection Line and be stopped. In the position where the dwell is in line with the "tail" of the Selecting Plate, the Plate will move down in the back and the front end will move up against the stud in the Upper Counter Plate. This Stud is held against the front extension of the Selecting Plate by a spring tension. As the Selecting Plate moves up, the Upper Counter plate will move up to the front and the rear extension will move down against the Drive Line.



The Drive Line has a series of dwells drilled in it that are in line with the Upper Counter Plates. These dwells work with the rear portion of each Plate.

Between 1-1/2 and 1-3/4 turns of the handle, the high portion of the Special Counter Drive Cam will come over the lower roll and stud in the Special Counter Drive Cam Arm, which is pinned to the Drive Arm Cam Line. The Cam Arm and Line will turn top to the back, as will all parts pinned to the line. The Drive Segment 51A1790, which is pinned to the left end of the Line, is in mesh with the Drive Segment 51A17968, which in turn mesh with the Drive Segment 51A1965. The latter Segment is meshed with the Pinion, which is pinned to the extreme left end of the Drive Line. When the Special Counter Drive Cam Arm is moved top to the back, the Drive Line will be turned top to the front, by the above mentioned parts. The dwell in the Drive Line will pick up the back extension of the Upper Counter Plate and cause it to move top to the back.

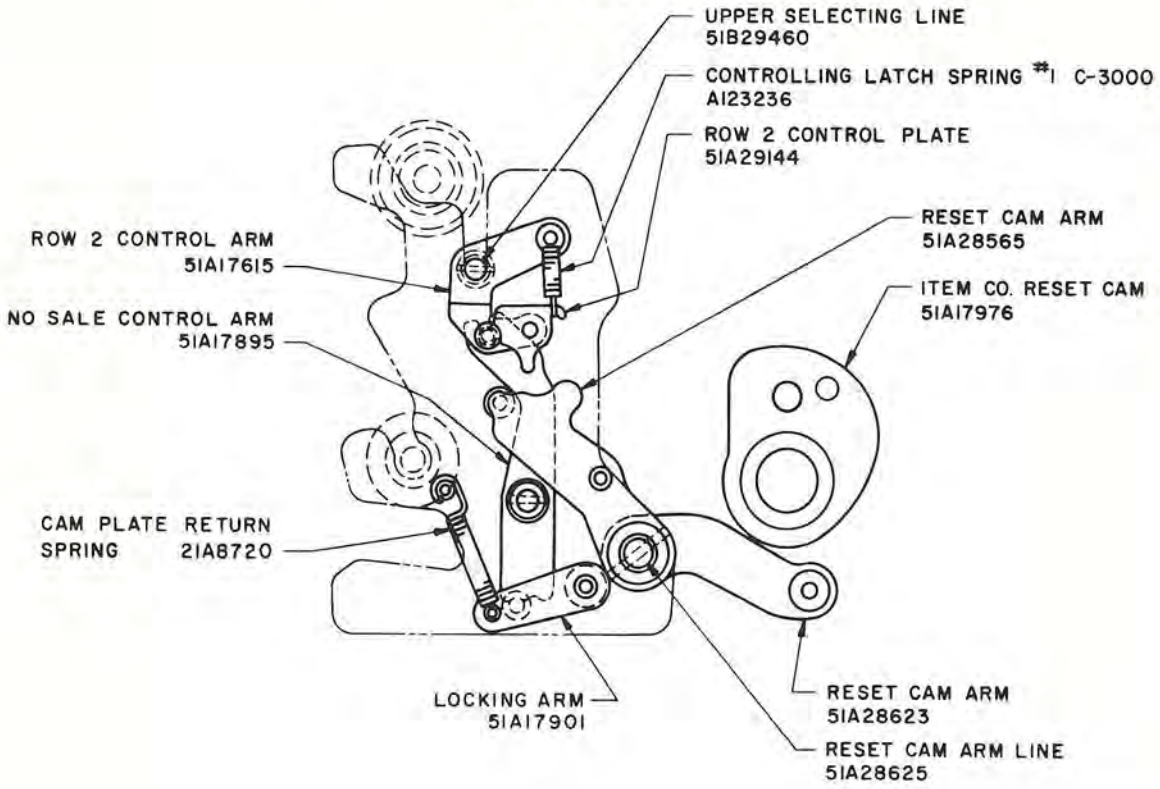


The upper portion of the Upper Counter Plate will pick up the Stud in the upper 3 or 4 Wheel Yoke and move it top to the front. The Feed Pawl which is assembled in the Yoke will pick up the unit Special Counter Wheel and move it one position with lead, at which time the retaining pawl will drop down to retain the Wheel in this position.

Slightly past 1-3/4 turns of the handle, the high portion of the Special Counter Drive Cam will move under the upper roll and stud on the Drive Cam Arm and move it top to the front. This will cause the Drive Line to be moved top to the back and the dwell in it, which is in line with the selected Upper Counter Plate will pick up the back portion of the Plate and move it top to the front.

Since all the Row 2 Special Counters except Coupon and Refund are net count, the Feed Yoke will be held in the fed position at this time by its retainer. At the time the Yoke was positioned top to the front to advance the unit wheel, the stud in the Yoke that is contacted by the Upper Counter Plate will move against and move the Net Count Actuating Plate top to the back. The Stud that extends to the left of the Plate will contact the Upper Counter Return Plate that is pinned to the Upper Selecting Line, and move it and the line top to the back.

RESTORING SPECIAL CO. YOKES
(C-52)

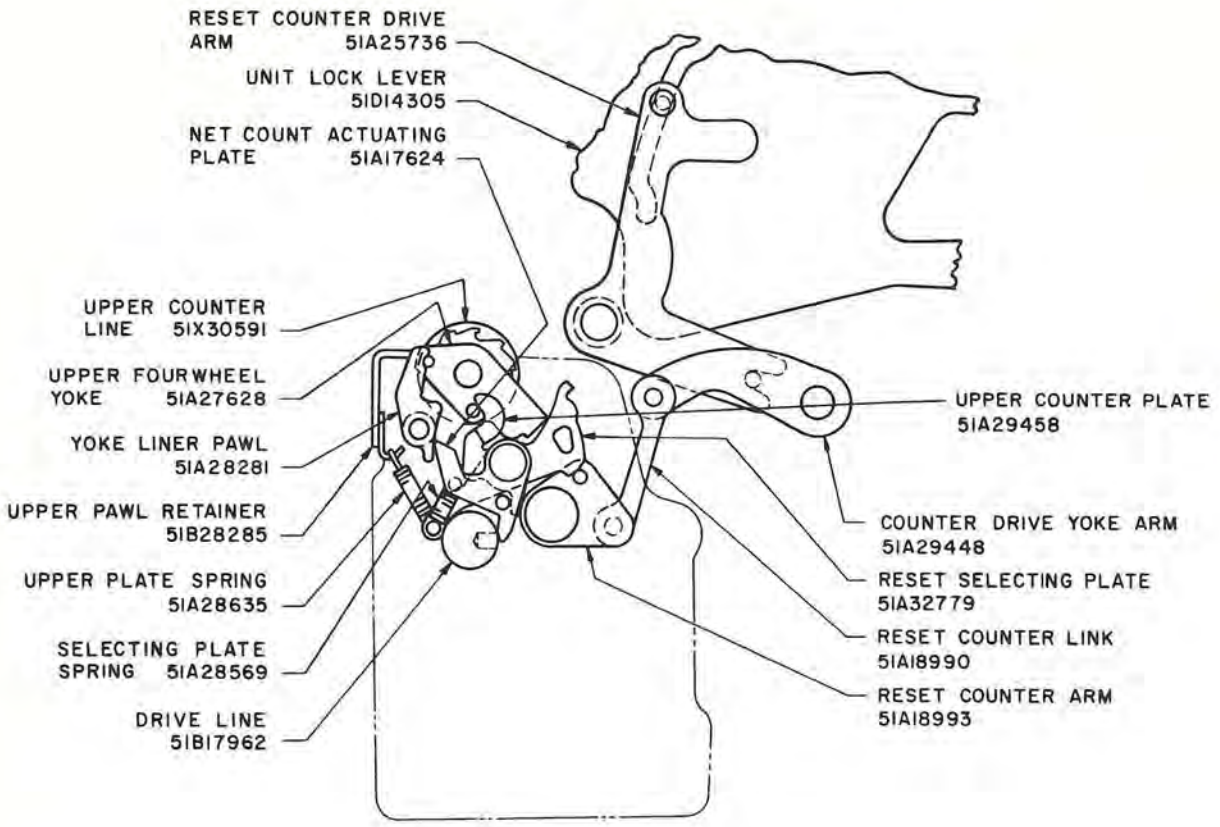


Pinned to the extreme right end of the Upper Selecting Line is the Reset Arm. The Reset Arm has assembled to it the Row 2 Control Plate which is flexible top to the back. As the line is turned top to the back, the Reset Arm is moved top to the back and the Row 2 Control Plate is placed in the path of the stud in the top part of the Reset Cam Arm 51A20565.

On the first operation following a Change-Balance Due the Reset Cam Arm will be moved top to the back. The Stud in the upper end of the Arm will contact the Row 2 Control Plate and move it and the Reset Arm and the Upper Selecting Line top to the front.

The Upper Counter Return Plate will move down in the front on the stud in the Net Count Actuating Plate. The Plate will contact the Stud in the Feed Yoke and restore it to its home position, ready to advance the Special Counter whenever it is again selected.

RESET COUNTER
(C-52)

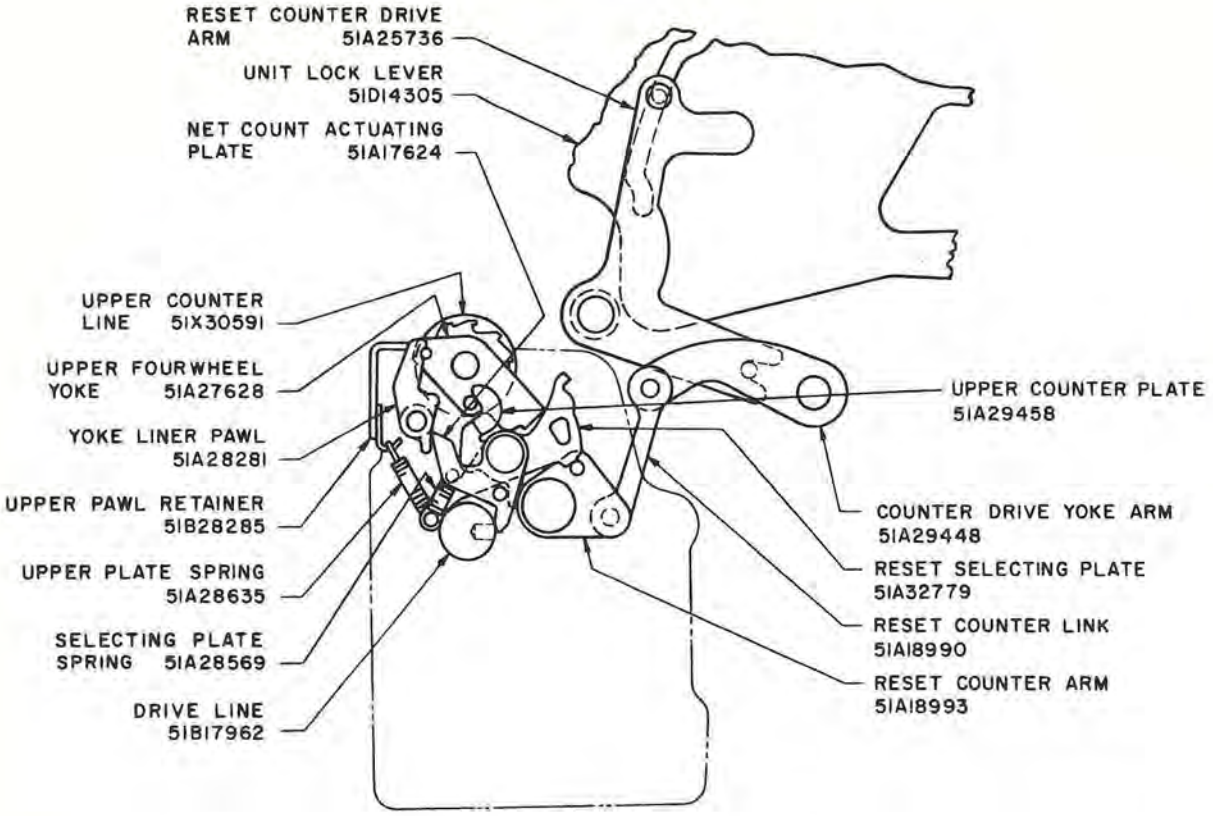

RESET COUNTER DRIVE ARM 51A25736
UNIT LOCK LEVER 51D14305
NET COUNT ACTUATING PLATE 51A17624
UPPER COUNTER LINE 51X30591
UPPER FOURWHEEL YOKE 51A27628
YOKE LINER PAWL 51A28281
UPPER PAWL RETAINER 51B28285
UPPER PLATE SPRING 51A28635
SELECTING PLATE SPRING 51A28569
DRIVE LINE 51B17962
UPPER COUNTER PLATE 51A29458
COUNTER DRIVE YOKE ARM 51A29448
RESET SELECTING PLATE 51A32779
RESET COUNTER LINK 51A18990
RESET COUNTER ARM 51A18993

"RESET" SPECIAL COUNTER

The selection of the Reset Counter is controlled by the Unit Lock Lever. Whenever the Unit Lock Lever is moved to the "Reset Row 2" -, "Reset Row 2 +" or "Read Group" position, the Reset Counter is selected to advance.

The stud in the upper end of the Reset Counter Drive Arm 51A4156 rides in the camming raceway in the Unit Lock Lever, and when the Lever is moved to the "Read Group,"Reset Row 2-" or "Reset Row 2+" position, the Arm will be moved top to the back. This arm yokes the Stud in the Counter Drive Yoke Arm 51A29448, which is swung on the Zero Stop Lever Line.

RESET COUNTER
(C-52)


RESET COUNTER DRIVE ARM 51A25736
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RESET SELECTING PLATE 51A32779
RESET COUNTER LINK 51A18990
RESET COUNTER ARM 51A18993

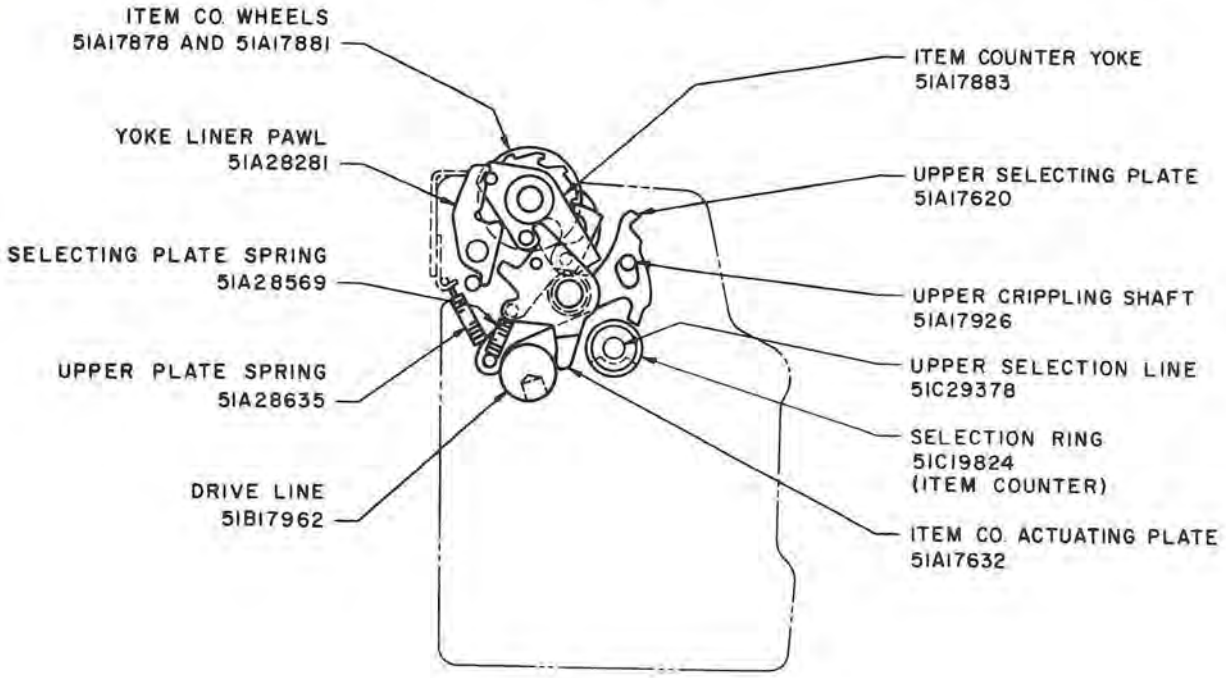
As the Reset Counter Drive Arm is moved top to the back, the Counter Drive Yoke Arm will move down in the front and the stud in the Reset Counter Arm will move down away from the Reset Counter Selecting Plate. The spring tension on the front of this Plate will cause it to follow the Stud.

As the front end of the Reset Selecting Plate moves up it contacts the stud in the front end of the Upper Counter Plate, moving the back extension of it down on the Drive Line.

Between 1-1/2 and 1-3/4 turns of the Handle the Drive Line will be moved top to the front and the dwell which is in line with the Upper Counter Plate will cause it to move top to the back. The upper end of the Plate will contact the stud in the Feed Yoke and move it top to the front, to advance the Counter. The Feed Yoke will be retained in this position by its retainer.

At the same time, the Stud in the Feed Yoke will contact the Net Count Actuating Plate and move it top to the back. The Stud in the Plate will move up and move the Upper Counter Return Plate and Upper Selecting Line top to the front. The Feed Yoke for the Reset Counter is restored to its home position on the first operation that resets the Item Counter. This is accomplished as previously explained in the Row 2 Special Counters.

ITEM COUNTER
(C-52)



ITEM COUNTER

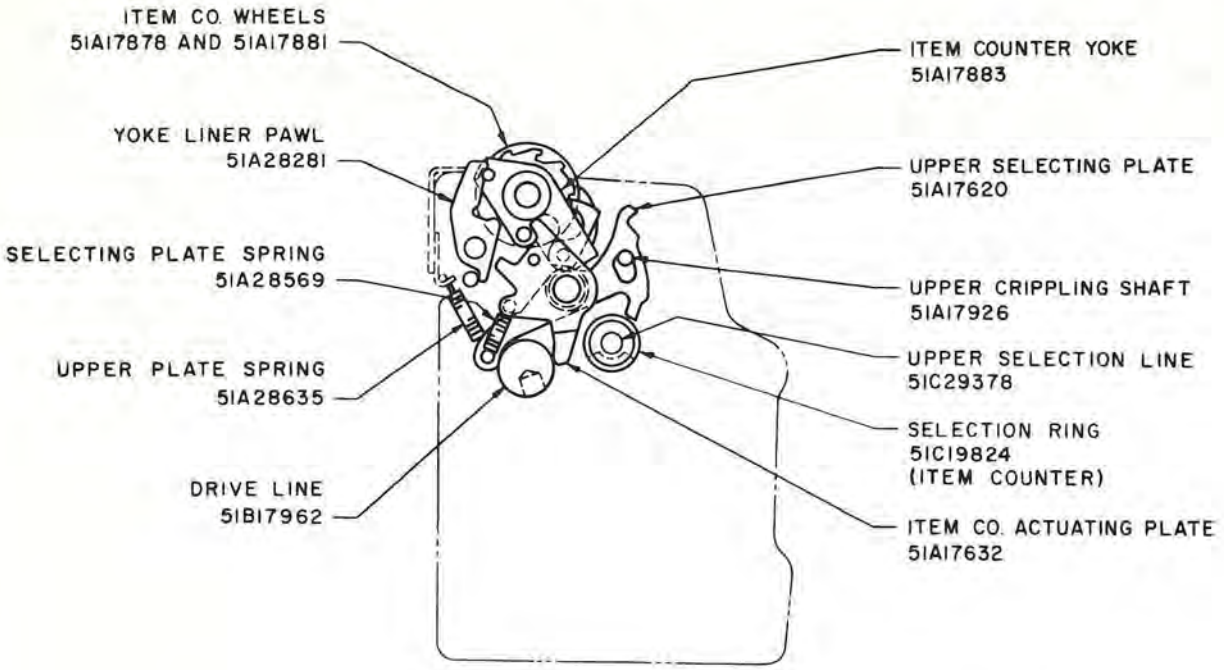
The Item Counter advances on every item operation with the exception of the Tax, Refund, and the Coupon.

Whenever the Row 2 Indicator Segment is positioned to Meat, Produce, Miscellaneous, Grocery, or Bakery position, the Selecting Gear Yoke will position the Selecting Line Gear and Selection Line so that the Selecting Ring will be positioned to a low surface under the "tail" of the Upper Selecting Plate for the Item Counter.

The Upper Selecting Plate for the Item Counter is held above the Upper Selecting Line by the Upper Crippling Shaft in the home position.

From 1/8 to 3/8 turns of the handle the Row 2 Indicator Segment is carried top to the back to the zero position. Between 3/4 and 1-1/8 turns of the handle the Segment is carried back down to the position corresponding to the key depressed. If this position is one of the previously mentioned, the low surface of the Selecting Ring will be directly under the "tail" of the Selecting Plate for the Item Counter.

ITEM COUNTER
(C-52)



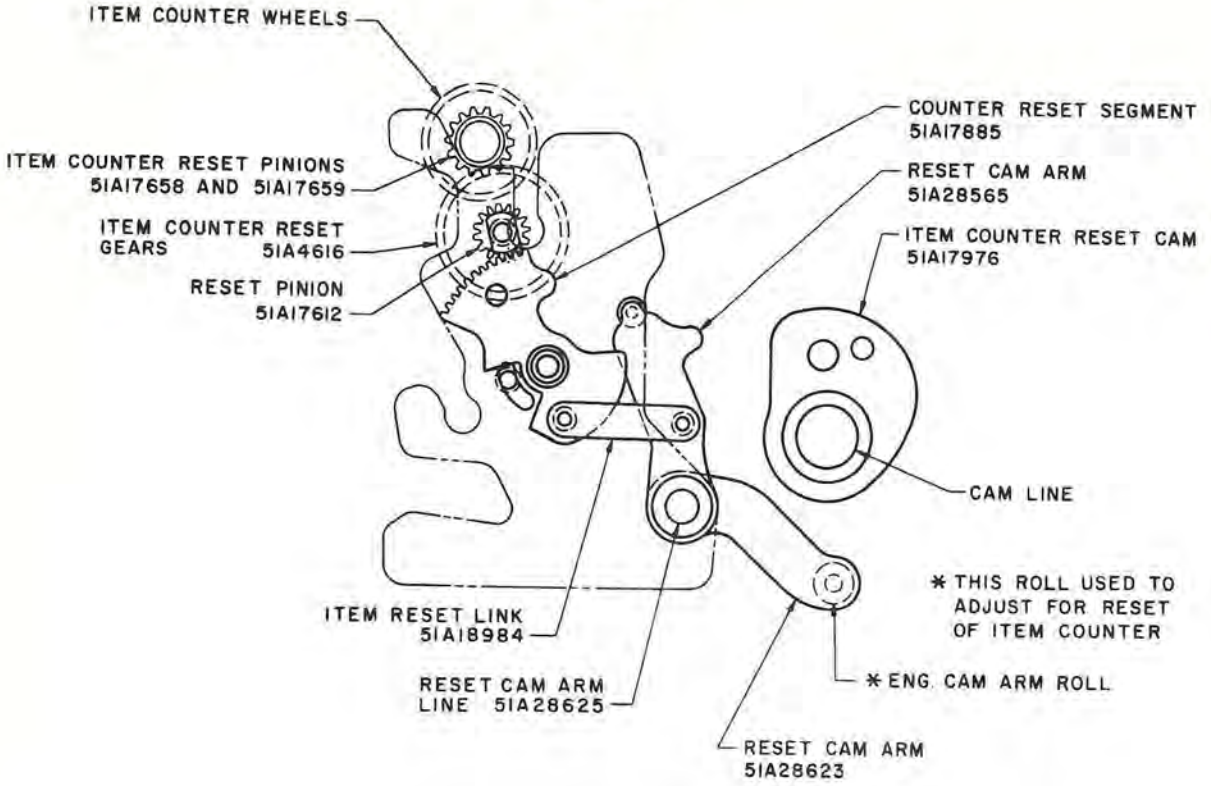
At 1-1/4 turns of the handle, the Hold-Out Cam Arm will allow the Upper Crippling Shaft to move down and free up the Selecting Plate for the Item Counter. With the low surface of the Selecting Ring under the "tail" of the Selecting Plate, the Plate will move up in the front. The stud in the front of the Selecting Plate will move the Item Counter Actuating Plate up so that the back extension will be down on the Drive Line.

Between 1-1/2 and 1-3/4 turns of the Handle, the Drive Line moves top to the front, and the dwell will pick up the "tail" of the Item Counter Actuating Plate and move it top to the back. The Plate yokes a stud in the Item Counter Yoke and moves it top to the front, advancing the Unit Wheel one position.

Slightly past 1-3/4 turns of the handle, reverse movement is given the Drive Line and the dwell will pick up the lower extension of the Item Counter Actuating Plate and move it top to the back to the "home" position.

In the event the Row 2 Indicator Segment is positioned to either Tax, Coupon or Refund, a high surface of the Selecting Ring will be under the "tail" of the Selecting Plate. When the Crippling Shaft is allowed to move down to free up the plate, the "tail" will not move down far enough to position the back extension of the Item Counter Actuating Plate down on the Drive Line. Therefore, the Item Counter Actuating Plate will receive no movement between 1-1/2 and 1-3/4 turns of the handle.

RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51A17658 AND 51A17659
ITEM COUNTER RESET GEARS 51A4616
RESET PINION 51A17612
COUNTER RESET SEGMENT 51A17885
RESET CAM ARM 51A28565
ITEM COUNTER RESET CAM 51A17976
CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51A18984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

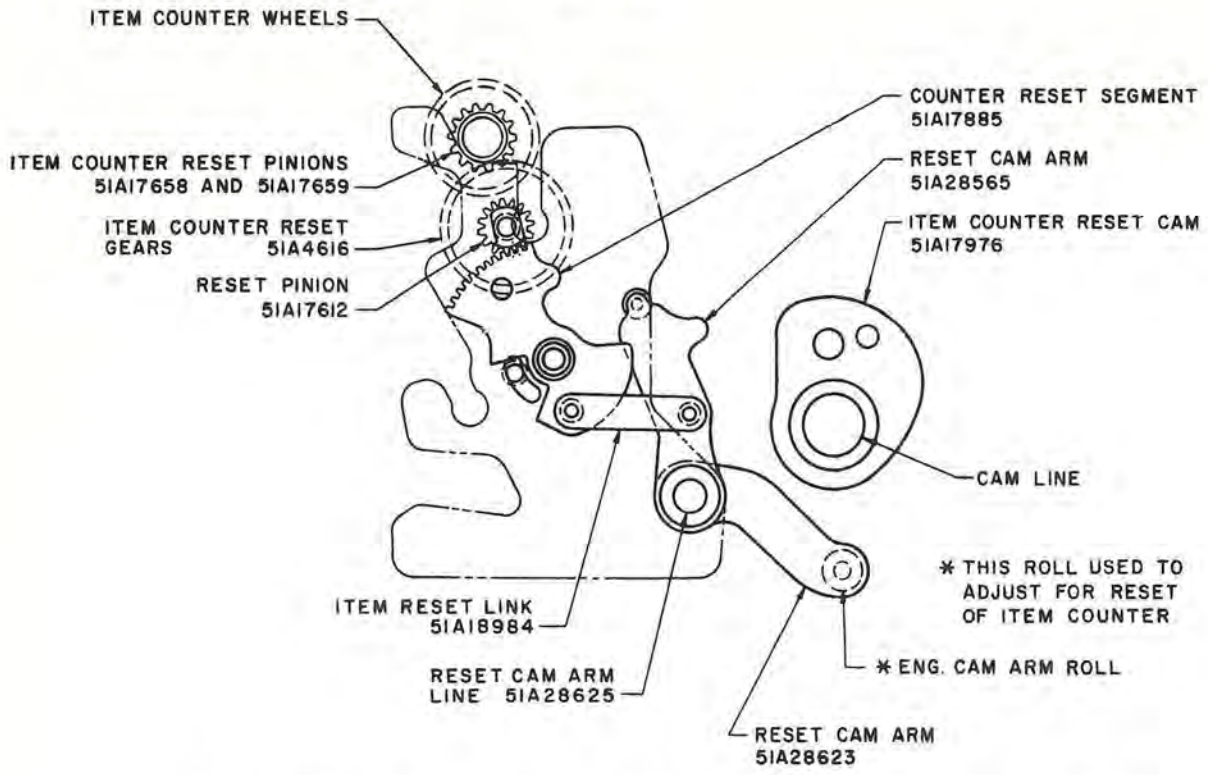
As was previously explained, the Item Counter is reset on the first operation following a Change-Balance Due operation.

When the Reset Cam Arm 51A28623 is in its home position, the Roll and Stud in the back of the Arm is down out of the path of the high surface of the Item Counter Reset Cam.

On a Change Balance Due operation, the Customer Counter will be advanced. When the Customer Counter Actuating Plate is moved up to advance the Customer Counter, the stud in the Plate, which extends through the right Counter Frame and rides in a camming surface on the Item Counter Reset Segment, moves up and moves the Reset Segment top to the back. The Item Counter Reset Link is moved to the front, and being connected to the Reset Cam Arm 51A28565, will move it top to the front.

The Reset Cam Arm, which is pinned to the Reset Cam Arm Line 51A28625, will move it and the Reset Cam Arm 51A28623 top to the front. This places the roll and stud in the back end of the Reset Cam Arm 51A28623 in the path of the high portion on the Item Counter Reset Cam.

RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51A17658 AND 51A17659
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CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51A18984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

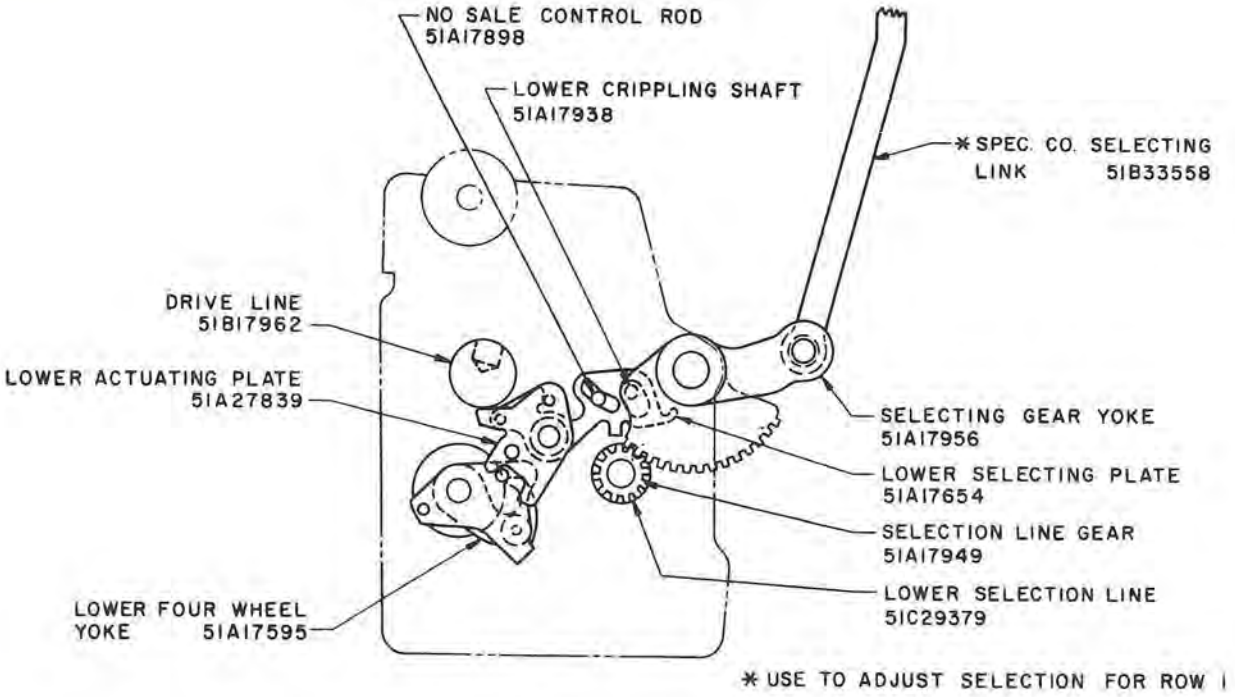
When the Item Counter Reset Segment was moved top to the back, the Reset Pinion which is meshed with Segment is turned top to the front. The hub of the Reset Pinion extends to the right through the two Item Counter Reset Gears. These Gears have assembled in them Reset Pawls which ride the Hub of the Reset Pinion.

When the Reset Pinion is moved top to the front, the two Reset Pawls in the Item Counter Reset Gears will ratchet over the spline cut in the Reset Pinion Hub.

Between 1/8 and 3/4 turns of the Handle on the following operation, the high portion of the Special Counter Reset Cam will come over the Roll and Stud in the rear portion of the Reset Cam Arm 51A28623 and move it and the Reset Cam Arm Line top to the back. The Reset Cam Arm 51A28565 will move top to the back, pulling the Item Reset Link to the back. The Item Counter Reset Segment will move top to the front, causing the Reset Pinion to move top to the back. The spline cut in the Hub of the Pinion will pick up the Reset Pawl in the Item Counter Reset Gears and turn them top to the back.

These Gears are meshed with the Item Counter Reset Pinion 51A17658 and 51A17659, which are tubed to the Item Counter Wheels. The Reset Pinion and Item Counter Wheels will be turned top to the front, to the zero position, resetting the Item Counter.

ROW I SPECIAL CO. SELECTION
(C-52)



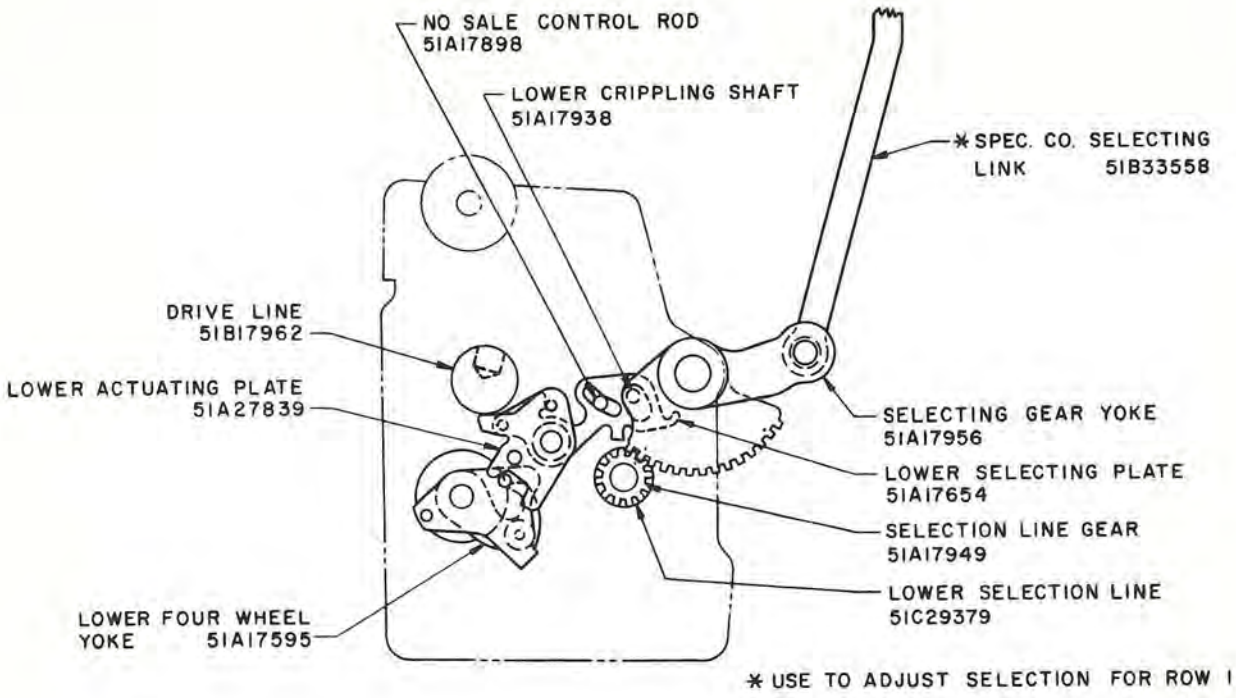
CUSTOMER COUNTER

Whenever a Change-Balance Due operation is made to complete a sequence,the Customer Counter will be advanced.

When the machine is operated on a Change-Balance Due, the Indicator Segment for Row 2 will be positioned to the 11th position on a Balance Due operation and the zero position on a Change operation. In either of these positions the Upper Selecting Line will be positioned so that none of the Special Counters in the Upper Counter Line are selected.

The Indicator Segment for Row 1 will be positioned to the Change-Balance Due position, and through the Special Counter Selecting Link and Selecting Gear Yoke 51A17955, a low surface on the Selection Ring 51C19824 will be under the "tail" of the lower Selecting Plate 51A17645, for the Customer Counter.

ROW I SPECIAL CO. SELECTION
(C-52)

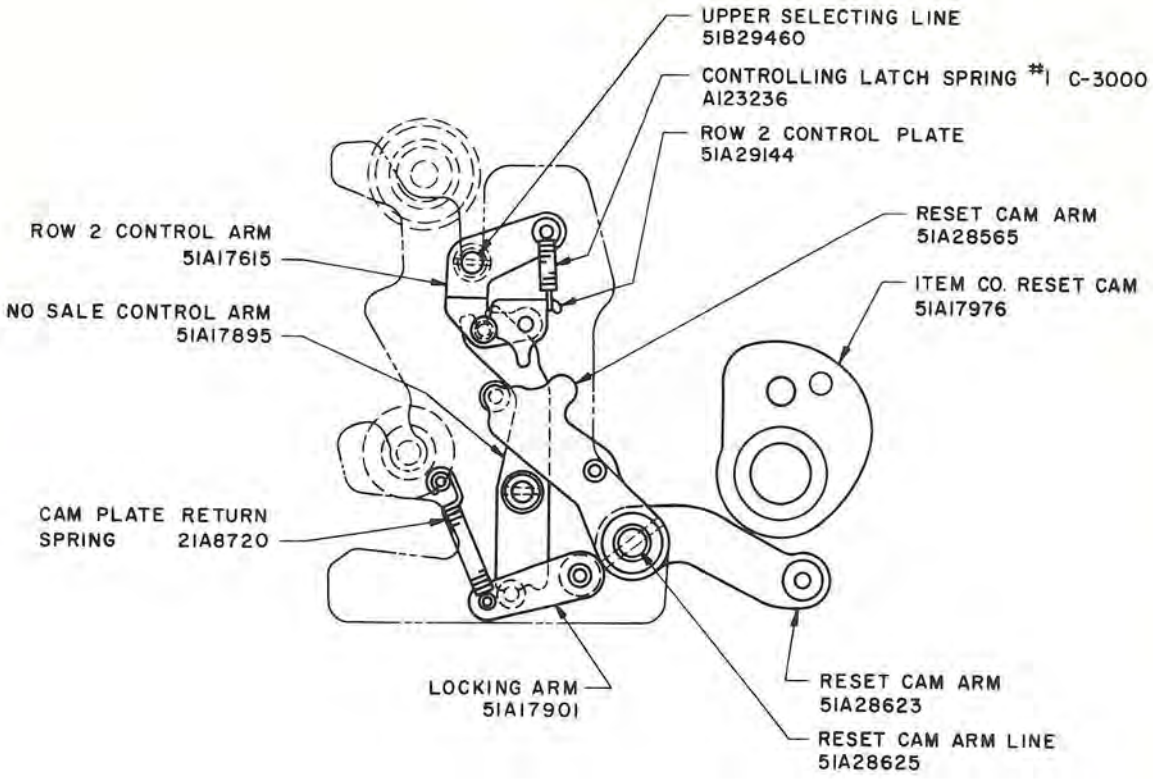


At 1-1/4 turns of the handle, the Lower Crippling Shaft will allow the Lower Selecting Plates to move down and sense for the high and low surfaces on the Selection Ring. At this time a low surface will be positioned under the Selecting Plate, allowing it to move down, which will move the lower Actuating Plate 51A27839 up against the Drive Line.

Between 1-1/2 and 1-3/4 turns of the handle, the Drive Line will move top to the front, and the dwell in the line will pick up the Actuating Plate and move it top to the back.

The Actuating Plate yokes the stud in the right side of the Customer Counter Feed Yoke and will move it top to the front, advancing the Unit Wheel of the Customer Counter.

Slightly past 1-3/4 turns of the handle, the Drive Line will receive reverse movement, and the dwell in the line will pick up the Actuating Plate and restore it and the Feed Yoke to their home position. When the Actuating Plate is moved top to the back between 1-1/2 and 1-3/4 turns of the Handle, the stud that extends to the right through the right Counter Frame, moves the Counter Reset Segment to the back to enable the Item Counter reset mechanism to function.

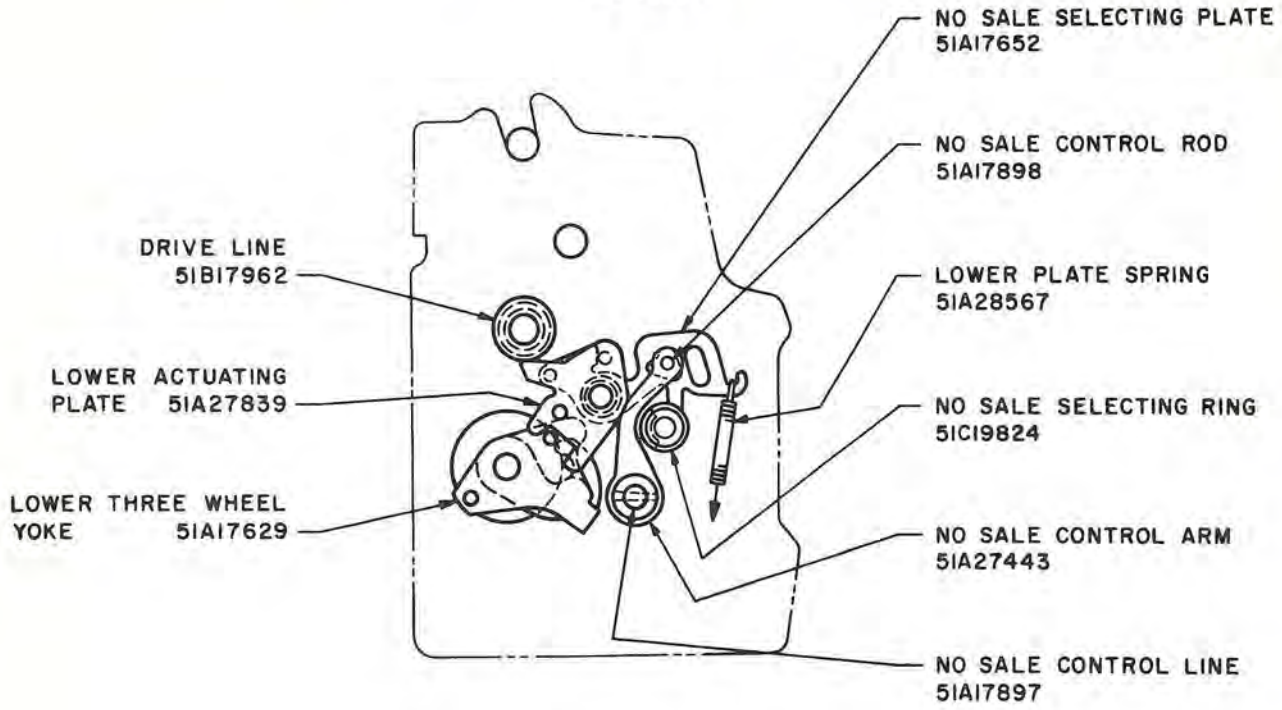


NO-SALE COUNTER

The No-Sale Counter is advanced on the first Change-Balance Due operation immediately following a previous Change-Balance Due, and on every consecutive Change-Balance Due following.

The No-Sale Control Arm 51A17895, which is pinned to the No-Sale Control Line yokes the stud in the Row 2 Control Arm. When the Reset Segment is fed to reset the Item Counter, the Row 2 Control Arm is moved top to the front, moving the No Sale Control Arm top to the back.

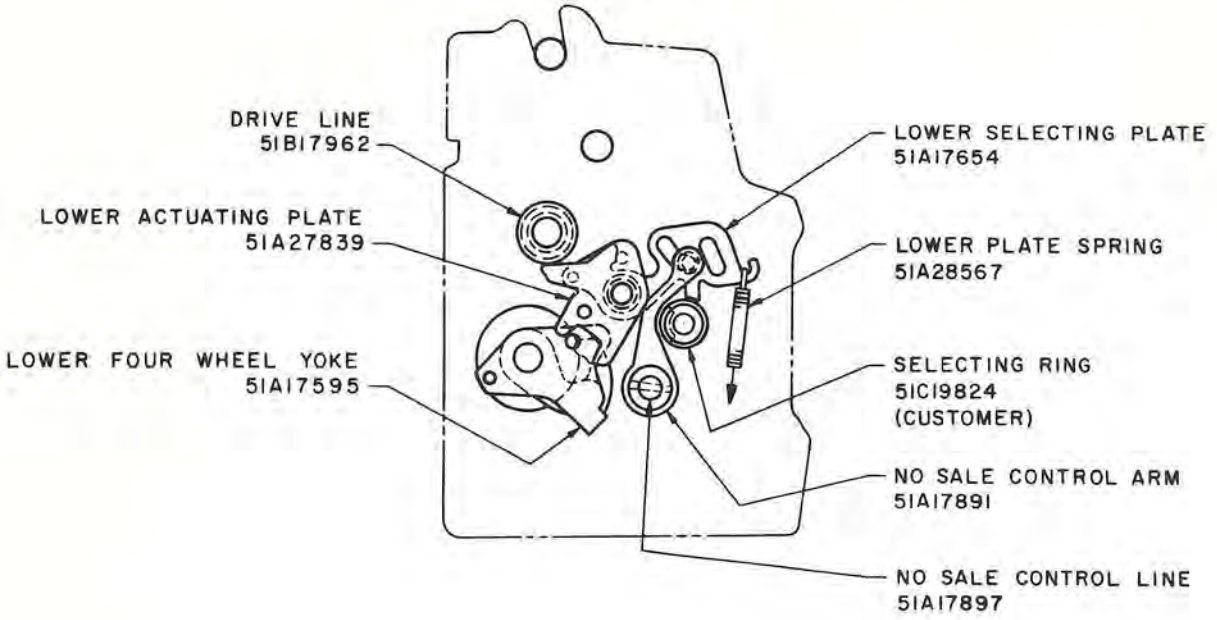
ABLING NO SALE COUNTER ON CHANGE-BALANCE DUE (C-52)



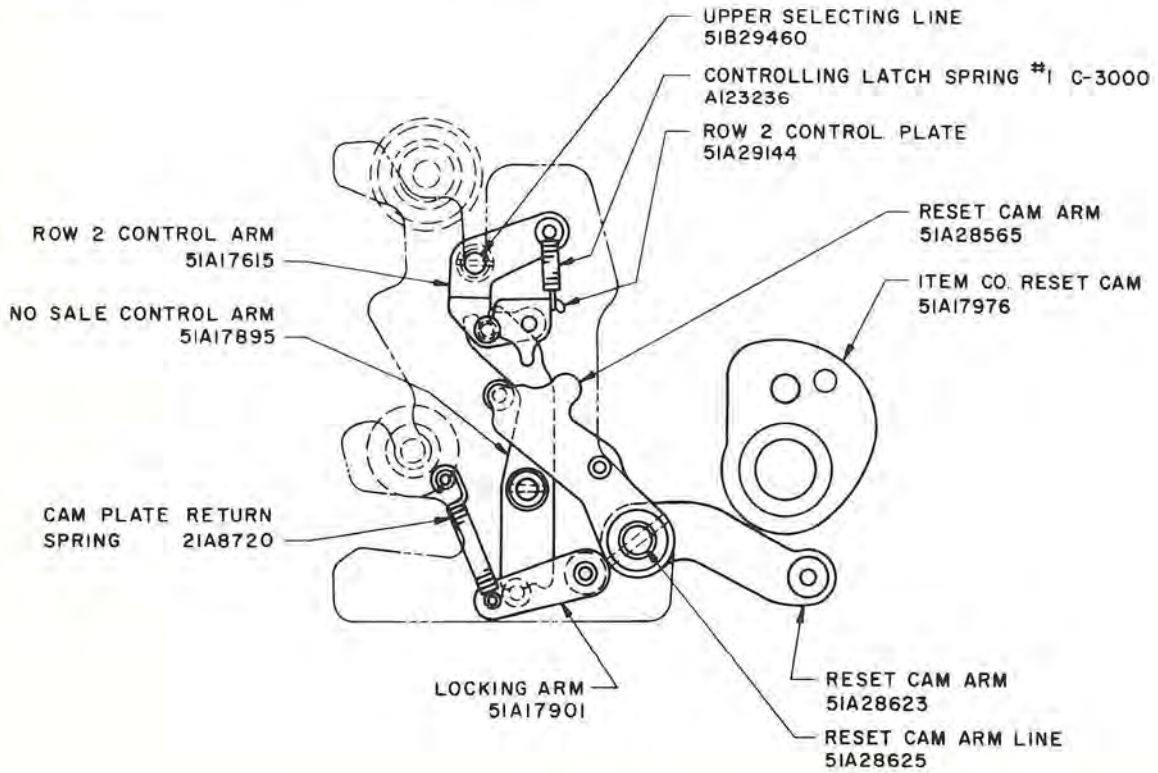
The No-Sale Control Arm 51A17891, which is pinned to the line, has a Stud in the upper end that works in the Camming Raceway in the Customer Counter Lower Selecting Plate. As the Arm is moved top to the back, the Stud cams the Selecting Plate up to disable it. At the same time, the No Sale Control Arms 51A27043, which are pinned to the No-Sale Control Line, are moved top to the back. Assembled to the top and between these Arms is the No-Sale Control Rod. This Rod is Assembled through the Camming Raceway in the No-Sale Counter lower Selecting Plate. When the No-Sale Control Line is moved top to the back, the No-Sale Control Rid will allow the No-Sale Counter Lower Selecting Plate to move down to the abled position.

As the Lower Crippling Shaft is moved down to allow the selecting plates to sense, the No Sale Counter Selecting Plate will feel for the high and low surfaces of the No Sale Selecting Ring 51C19824. On this operation the No Sale Selecting Ring will have a low surface under the "tail" of the No Sale Counter Selecting Plate 51A17652. Between 1-1/2 and 1-3/4 turns of the handle, the Drive Line will be moved toe to the front. This will advance the No Sale Counter in the same manner as previously explained in the Customer Counter explanation of this section.

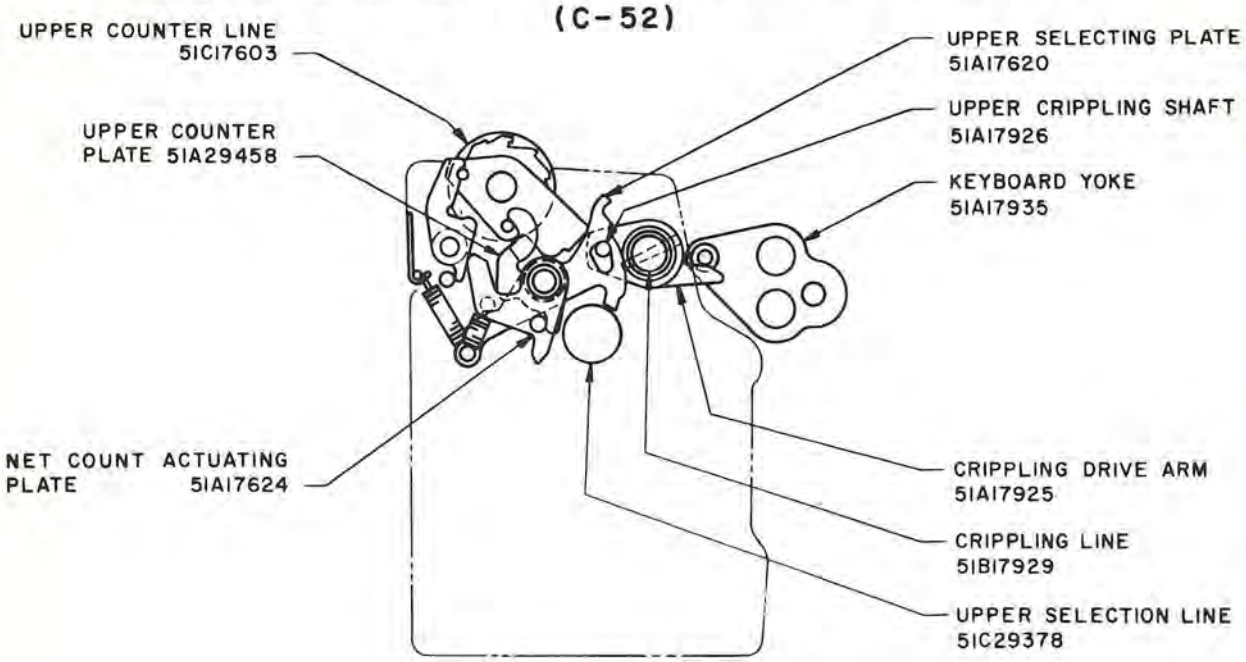
DISABLING CUSTOMER COUNTER ON CHANGE-BALANCE DUE OPERATION (C-52)



Whenever the first Row 2 or Grocery Motor Bar operation is made, the Upper Selecting Line will be moved top to the back. The Row 2 Control Arm will move the No Sale Control Arm and No Sale Control Line top to the front. The No Sale Control Arm 51A17891 will move the Customer Counter Selecting Plate down to allow it to sense, and the No Sale Control Rod will raise the No Sale Selecting Plate to disable the selection of the No Sale Counter.



SPECIAL COUNTER CRIPPLING U.L.L. OUT OF REGISTER (C-52)



SPECIAL COUNTER DISABLING

UNIT LOCK LEVER OUT OF REGISTER

When the Unit Lock Lever is moved out of the register position in either direction, the Zero Stop Yoke Arm, which is swung on the inside of the left Side frame and has a stud in the raceway of the Unit Lock Lever, will be moved top to the back. The Arm pinned to the left end of the Keyboard Yoke 51A17933 will move top to the front, and the stud in the front end will move down on the rear extension of the Crippling Drive Arm 51A17925.

The Crippling Drive Arm is pinned to the left end of the Crippling Line and will cause the line to turn top to the back. The Upper and Lower Crippling Shafts will move up and hold all Selecting Plates except the Reset Counter Selecting Plate above the Selection Line to disable the Special Counters.

RESETTING SPECIAL COUNTERS

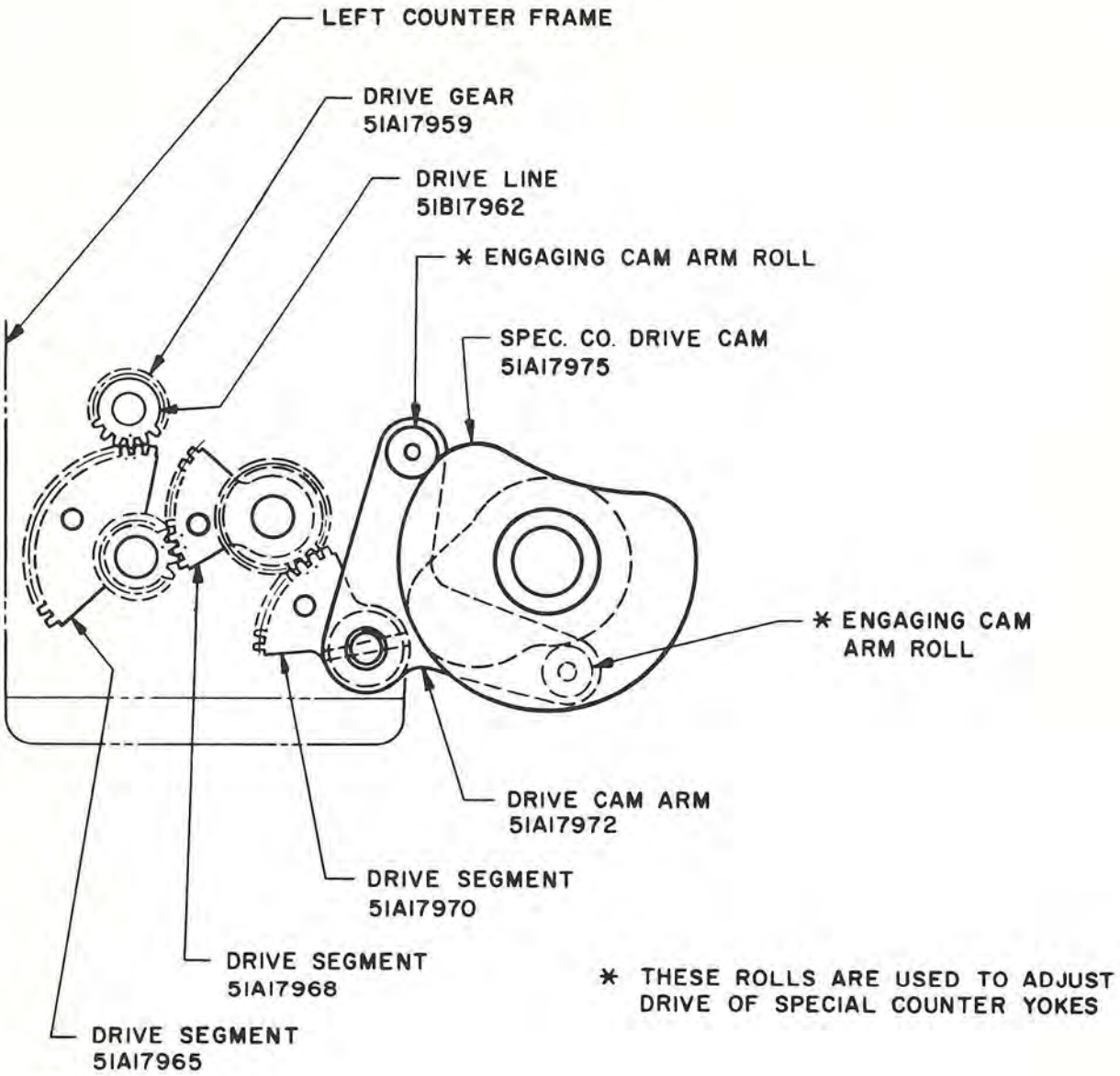
The Special Counters on the C-52 are able to reset only with the Unit Lock Lever in the "Reset Row 2-", "Reset Row 2+", or "Read Group" position.

When the Unit Lock Lever is moved to one of the above positions, the Reset Counter Drive Arm 51A4156 will be moved top to the back. The lower left portion of the arm has a stud in it that extends through the left side frame.

As the Reset Counter Drive Arm is moved bottom to the front, the stud in it contacts and moves the Reset Lock Arm top to the front. The Stud in the front of this Arm is moved out of the locking surface of the Special Counter Reset Control Plate. This frees up the Upper Special Counter Line so that is may be turned top to the front, to reset the Special Counters to the zero position.

The Reset Knob, which is located outside the Printer Front Plate, is used to reset the Special Counters. When the Knob is turned to reset the Special Counter, the spline cut in the Upper Counter Line will pick up the Reset Pawls which are assembled in the Special Counter Wheels. Through the Gear pinned to the left end of the Upper Counter Line and chain of gears mounted on the left Counter Frame, the lower Counter Line will turn top to the front, and the spline cut in this line will pick up the Reset Pawls that are assembled in the lower Special Counter Wheels. The Special Counter Reset Knob is turned until the Wheels are reset to the zero position.

SPECIAL COUNTER DRIVE
(C-52)



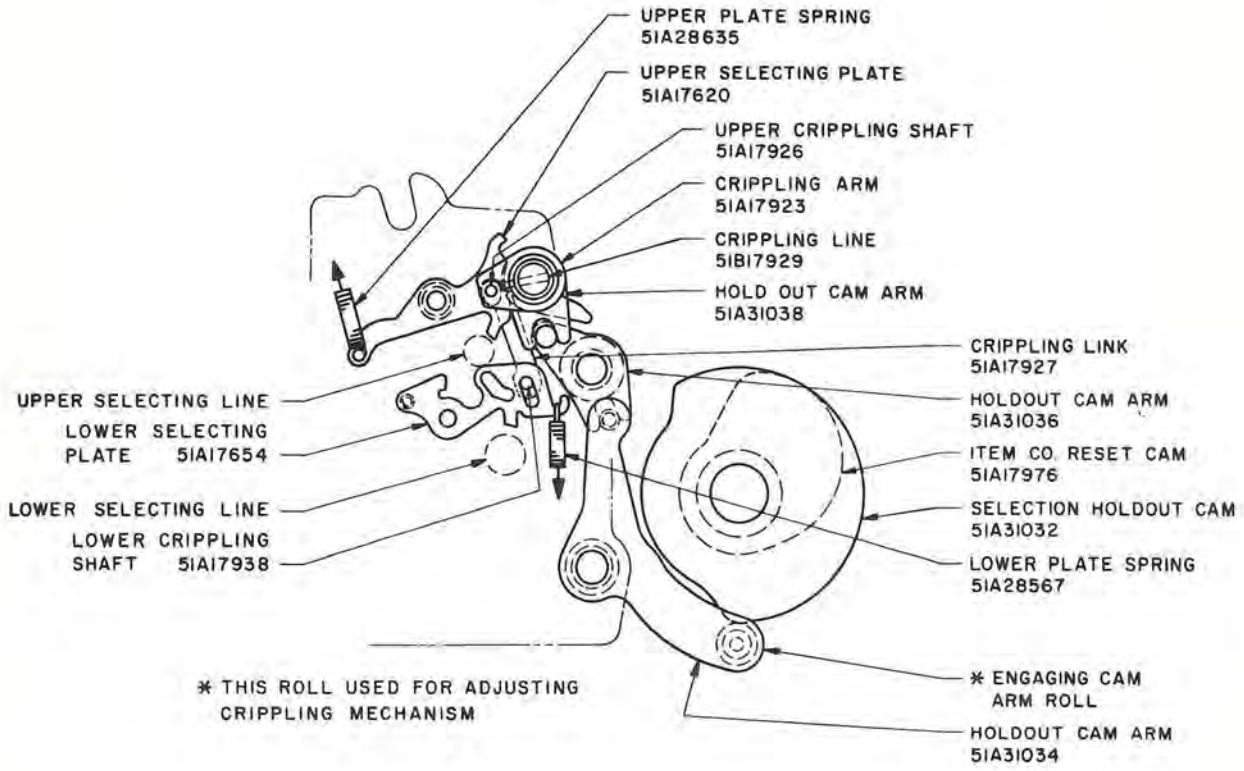
ADJUSTMENTS

The Special Counter Yokes should be carried up in the back far enough to allow the Retaining Pawl to get safely into the next tooth of the Special Counter Wheel with a slight amount of lead. The amount of carry to these Yokes is determined by the rolls on the Drive Cam Arm 51A17972.

The following Rolls are used to make this adjustment:

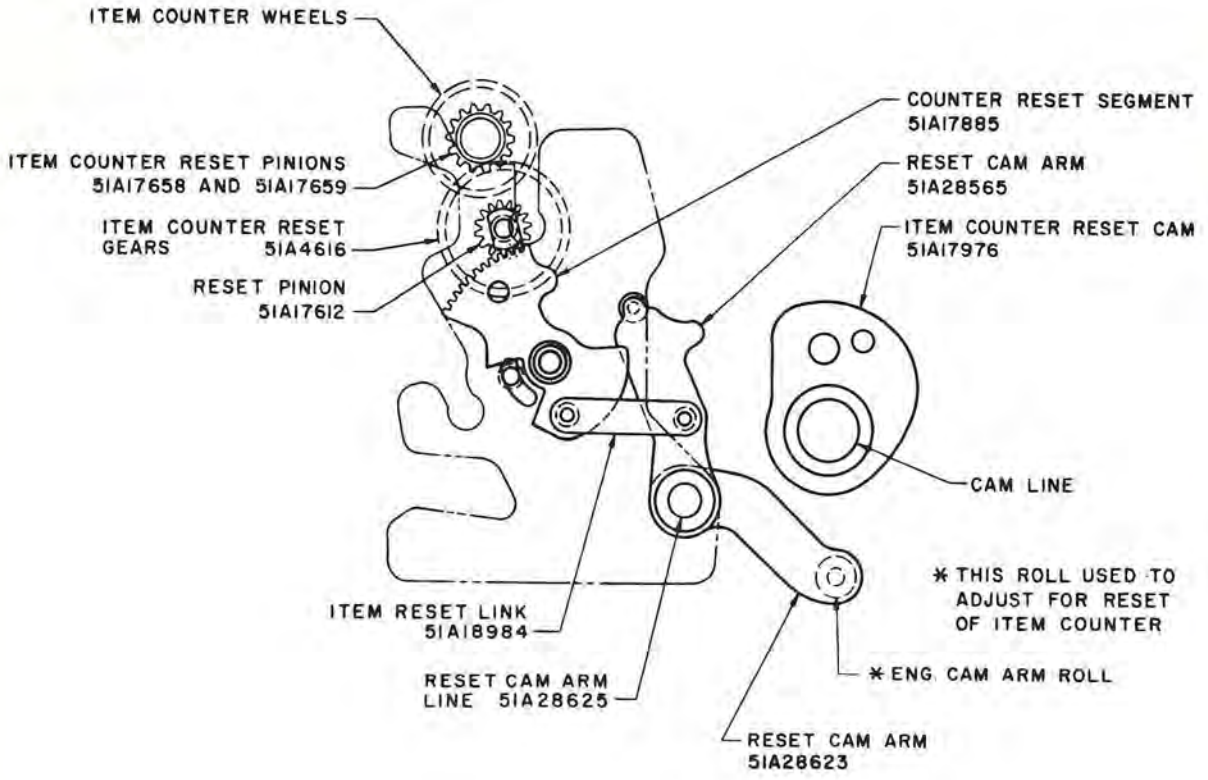
Page No.	Description	Size
1900A83033	Ribbon Feed Roll #1	.375 (Standard)
51A8210	Engaging Cam Arm Roll	.370
51A209	Engaging Cam Arm Roll	.360
51A8211	Engaging Cam Arm Roll	.380
51A8109	Engaging Cam Arm Roll	.390

SPECIAL CO. CRIPPLING U.L.L. IN REGISTER (C-52)



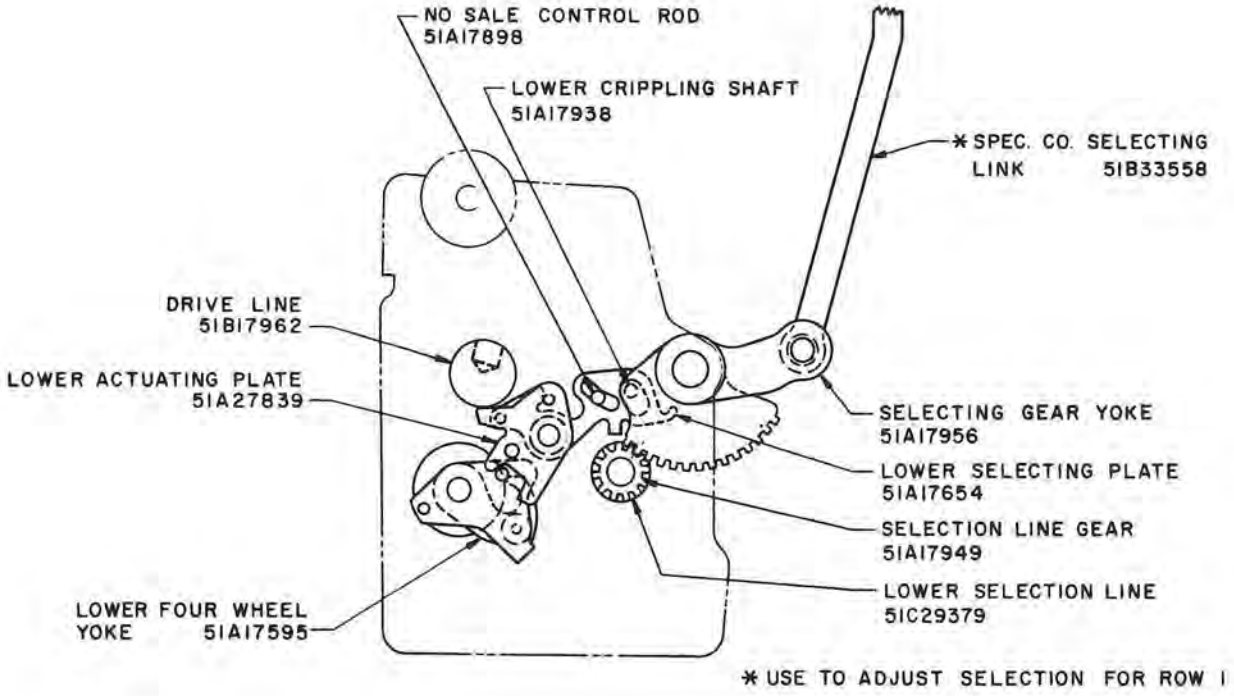
The Selecting Plates for the Special Counters should be held by the Upper and Lower Crippling Shafts above the Selecting Lines with clearance, to allow the Selecting Lines to position without any interference from the Plates. In order to obtain this, the roll on the Holdout Cam Arm is used. The above Rolls that were used to adjust the carry of the Special Counter Yokes will also be used to make the adjustment.

RESETTING ITEM COUNTER
(C-52)


ITEM COUNTER WHEELS
ITEM COUNTER RESET PINIONS 51A17658 AND 51A17659
ITEM COUNTER RESET GEARS 51A4616
RESET PINION 51A17612
COUNTER RESET SEGMENT 51A17885
RESET CAM ARM 51A28565
ITEM COUNTER RESET CAM 51A17976
CAM LINE
* THIS ROLL USED TO ADJUST FOR RESET OF ITEM COUNTER
* ENG. CAM ARM ROLL
ITEM RESET LINK 51A18984
RESET CAM ARM LINE 51A28625
RESET CAM ARM 51A28623

The resetting of the Item Counter should be adjusted so that both Item Counter Wheels are reset to zero position with a slight amount of lead to enable the Retaining Pawls to retain the Wheels. In order to obtain this, the Roll on the Item Counter Reset Cam Arm is used. Use one of the Rolls that were mentioned in the adjustment for the drive of the Special Counter Yokes.

ROW I SPECIAL CO. SELECTION
(C-52)

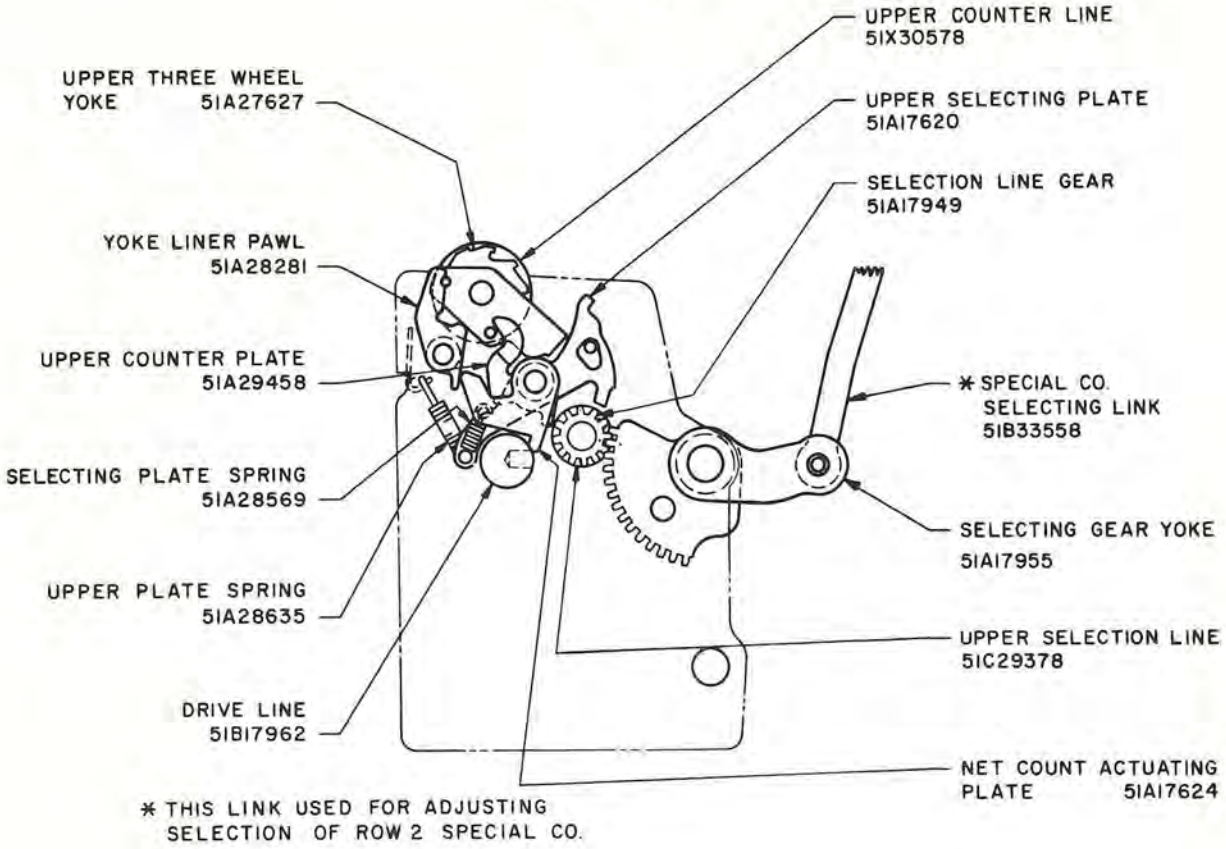


The Special Counter Selection is determined by the position of the Upper and Lower Selecting Lines. These Lines are positioned by the Indicator Segments for Row 1 and Row 2, through the Special Counter Selecting Links and Selecting Gear Yokes. The following Special Counter Selecting Links are used to adjust the selection of the Special Counters:

Page No.	Description	Size
51X33548	Special Counter Selecting Link	4.088
51X33549	Special Counter Selecting Link	4.099
51X19007	Special Counter Selecting Link	4.110 (Standard)
51X33550	Special Counter Selecting Link	4.121
51X33551	Special Counter Selecting Link	4.132

The above listed Links are used for the adjustment of Row 1. This link has only one Stud in the end of it.

ROW 2 SPECIAL CO. SELECTION
(C-52)



Page No.

51X33540	Special Counter Selecting Link	4.088
51X33541	Special Counter Selecting Link	4.099
51X28269	Special Counter Selecting Link	4.110 (Standard)
51X33542	Special Counter Selecting Link	4.121
51X33543	Special Counter Selecting Link	4.132

The above Links are used to adjust the selection for Row 2 Special Counters, and this link has a Stud in both ends.

To test the above adjustments to see if the correct length of Special Counter Link has been used, operate machine and allow both Row 1 and Row 2 Latch to go to the 11th position. Complete the operation and see if the marks in the Hubs for the Selection Lines in the Right Counter Frames line up with the marks on the Hubs of the Selection Ring for the Item Counter and Customer Counter. If these marks are in line, the correct length Link has been used.

CHANGING FROM ROW 2 ITEM COUNT

In some instances it may be desired to change the Special Counter from Net Count to Item Count. This change has been made very simple by the forethought of the design of the Special Counter Unit.

In order to make this change, all that is necessary is to install the Item Counter Stud in the Special Counter Yoke for the Special Counter where Item Count is desired.

There is a hole in the Yoke provided for the Stud. Simply by installing the Stud in the hole and installing the Stud Clip 97A12147 to retain it, the Counter is changed from Net Count to Item Count. This enables the Actuating Plate to feed and restore the Yoke on the same operation.

When the Drive Line is moved to the front between 1-1/2 and 1-3/4 turns of the handle, the Actuating Plate will move up against the Stud in the Special Counter Yoke and move it top to the front, advancing the Unit Wheel. At the same time the stud will contact the Counter Plate and move it top to the back. Slightly past 1-3/4 turns of the handle, the Drive Line will move top to the back, and at this time the dwell in the line will restore the Actuating Plate top to the front. The Item Counter Stud in the Plate will contact the lower portion of the Counter Plate and move it top to the front. It will move down on the stud in the Special Counter Yoke and restore it, where, when selected, it will again advance the Counter.

SECTION "W", "X", AND "Y"

TO THE

CLASS 52

SERVICE MANUAL

Insert these sections in the back of Class 52 Service Manual, MS 203

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DAYTON, OHIO 45409

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November 11, 1965
MS 203

SECTION "W"

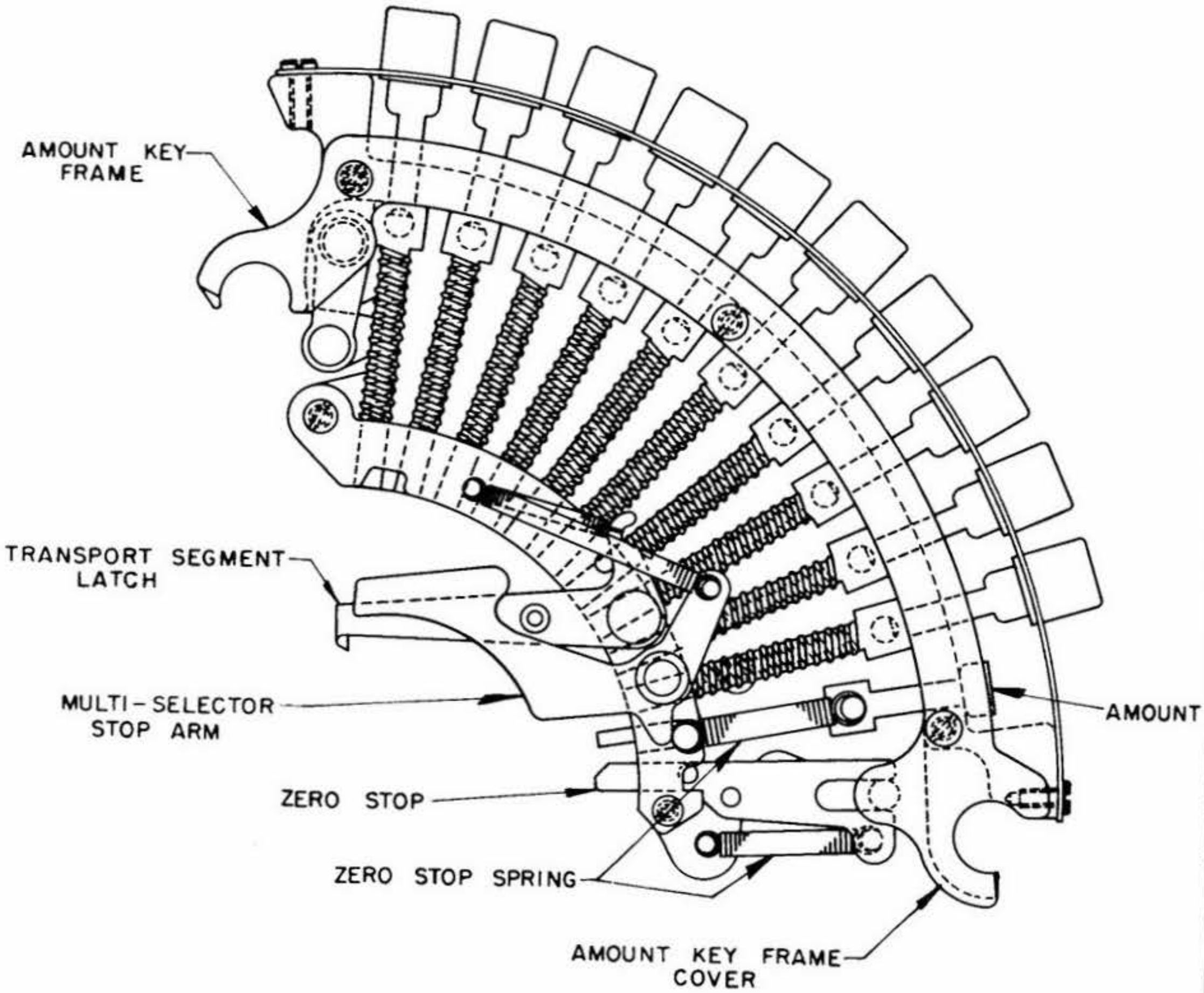
PRE-DETERMINED REPEAT

This feature makes it possible to pre-select from 2 to 11 the number of operations of the same Amount, Department and Classification while indexing the operation only once on the Keyboard.

Row 10 is used to pre-select the desired number of operations to be repeated, upon depression of the Row 2 Department Key. The machine will automatically repeat the same number of times as indicated on the key pressed in Row 10.

The "Pre-Determined Repeat" feature is identified by the letters "PR" following the printer designation.

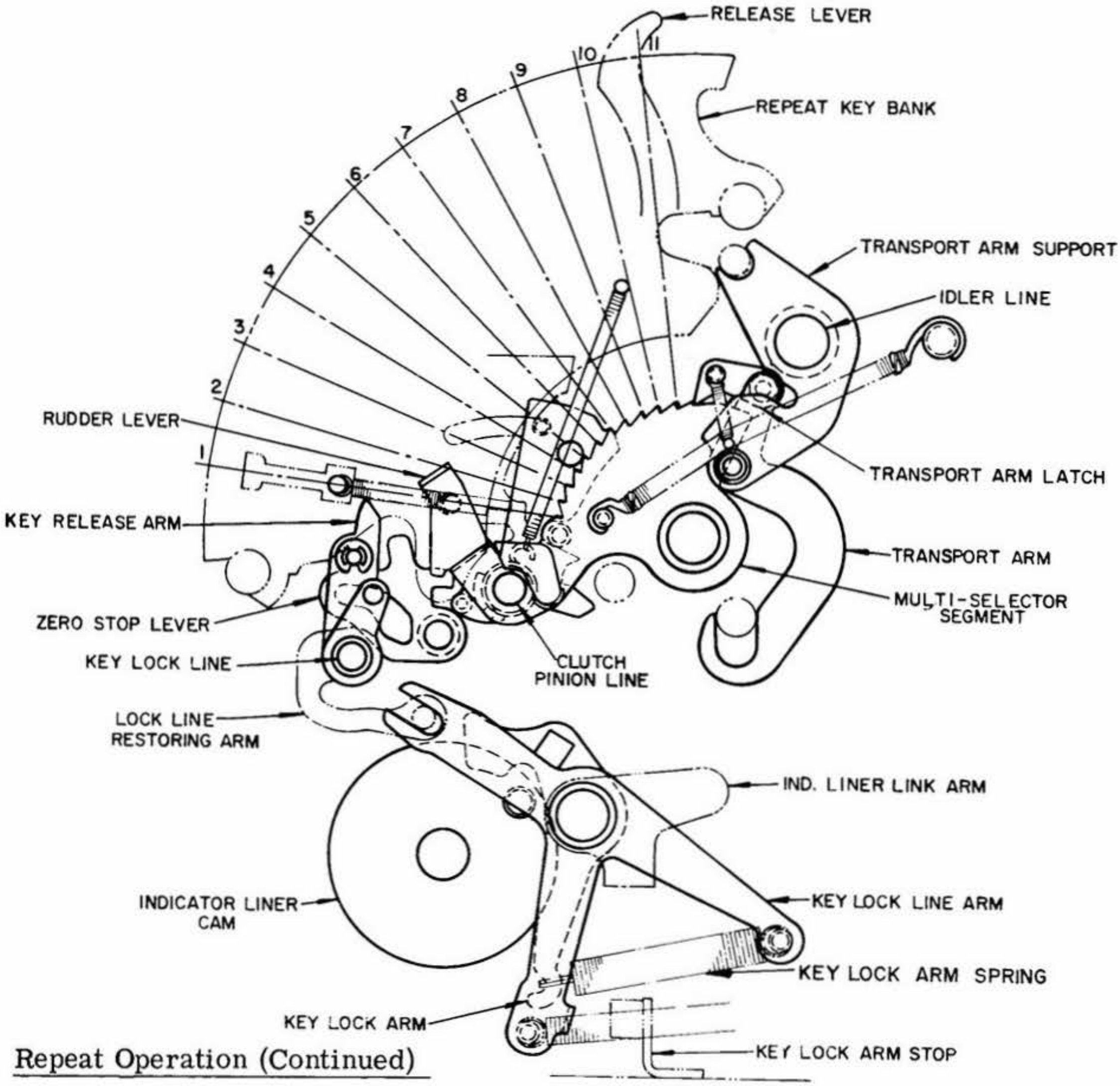
REPEAT KEY BANK



Repeat Operation

As a key in Row 10 is pressed, the key in Position 1 will be cammed to the front, out of the path of the multi-Selector Segment.

When the machine is tripped, the K. L. L. is turned top to the back, carrying the Key Release Arm top to the back. As Spring Tension moves the multi-Selector Segment up to the key pressed, the Stud in the Segment that is yoked by the Rudder Lever will cam the Rudder Lever top to the front, until the step in the Upper Extension is against the Stud in the Transport Latch. Also, a Stud in the Rudder Lever will move into a cutout in the U. L. L. preventing it from being moved.

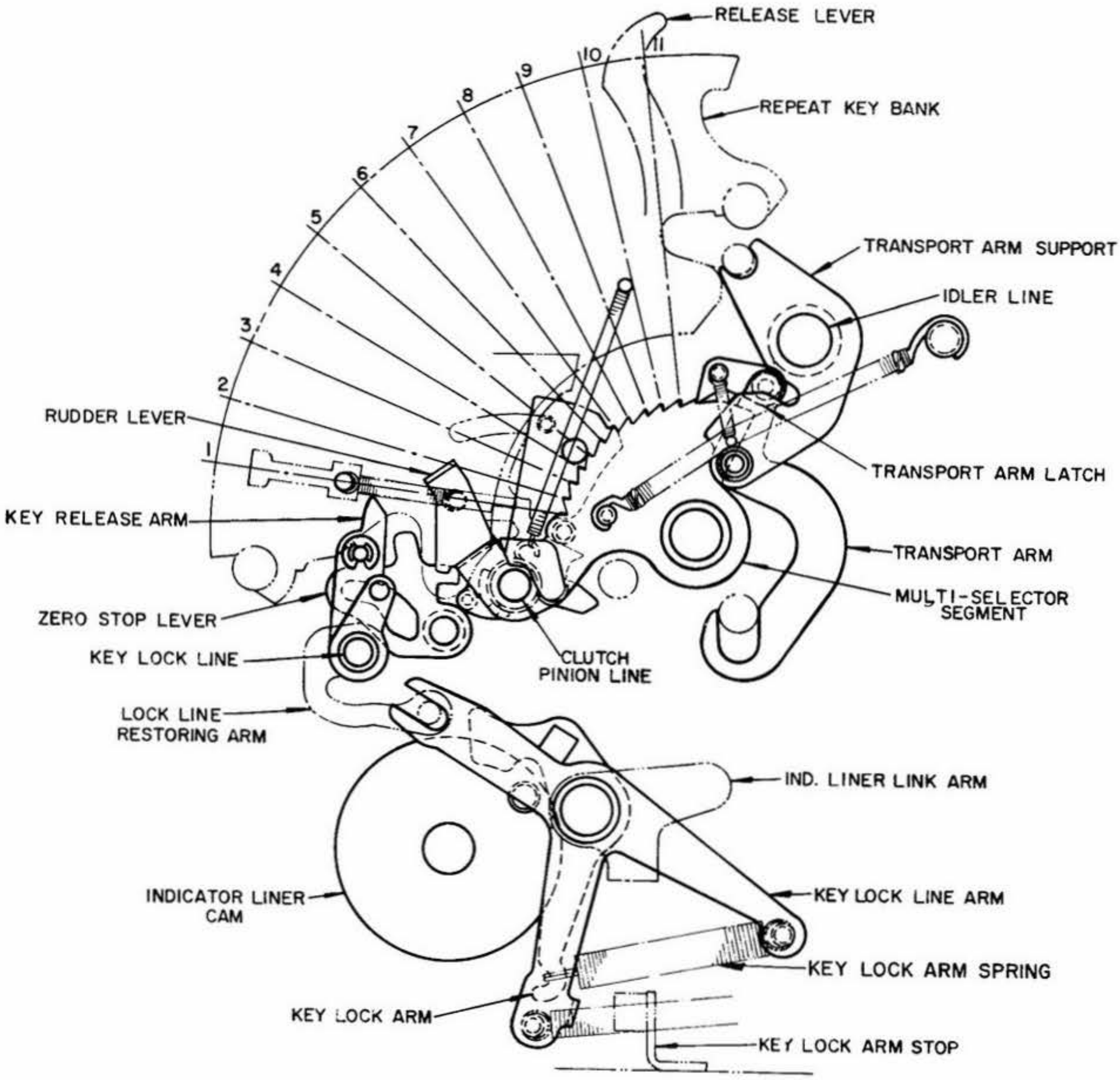


Repeat Operation (Continued)

As the Bail Shaft moves to the front, it carries the Transport Arm top to the back and the Spring Stud in the Transport Arm Latch will ride into the Raceway of the Transport Arm Support. Due to the cut of the Raceway the Transport Arm Latch will move up in the front, out of the path of the multi-Selector Segment. This allows the Segment to move up to the Key pressed.

As the Segment moves up to the Key pressed, the multi-Selector Stop Arm rides on the Roll and Stud in the Segment to slow the movement of the Segment.

At 3/4 T.O.H. the Bail Shaft will contact the back extension of the Rudder Lever and will move it top to the front, placing the front turned extension in the path of the Key Release Arm preventing the K. L. L. from restoring fully. As the Rudder Lever is moved top to the front, the Stud in the Transport Segment Latch will ride out of the step and to the back of the Rudder Lever. This will allow the Latch to ride on the multi-Selector Segment.



Repeat Operation (Continued)

As the Bail Shaft is restored to the home position, it carries the Transport Arm and the Transport Arm Latch top to the front. As the Spring Stud in the Transport Latch is moved out of the Raceway in the Transport Arm Support, the Spring Tension will hold the Latch against the teeth of the Segment and will move the Segment one position top to the front. The multi-Selector Segment will be retained to the front by the Transport Segment Latch. The Latch will move the Segment one position each operation until the Stud and the Segment contacts the rear extension of the Rudder Lever and moves it top to the back, removing the front turned extension from the path of the Key Release Arm, freeing the K. L. L. to be restored.

Key Lock Line Restoring

In order for the K. L. L. to be retained in the Trip Position, the K. L. L. restoring mechanism is made flexible.

At 1-3/4 T. O. H. a Stud in the Indicator Liner Cam will move the Key Lock Arm top to the back and through Spring Tension will move the K. L. L. Arm top to the back. The K. L. L. Arm yokes a Stud in the Lock Line Restoring Arm, which is pinned to the K. L. L., and will move the Lock Line Restoring Arm bottom to the front turning the K. L. L. top to the front. This movement will continue until the Key Release Arm moves against the turned extension of the Rudder Lever. At this point the Key Lock Arm Spring will be stretched. The K. L. L. will not receive enough movement to restore the keys, therefore, the machine will remain tripped and will continue to operate.

Row 1 and Row 2 Operation

There would not be a Key pressed in Row 10 on a Row 1 operation. Therefore, the Zero Stop will prevent the Multi-Selector Segment from moving up the bank.

On a Row 2 operation, through 2 yokes on the Clutch Pinion Line, the Row 10 Zero Stop will be held to the front and the dummy key in the first position will stop the movement of the Multi-Selector Segment. Again, the machine will operate only one time.

Unit Lock Lever Out of Register Position

When the Unit Lock Lever is moved out of "Register" position and the Zero stop is held to the front, out of the path of the Segment, the Key pin in the one or first position will act as the key pressed and the Segment will move up to the one position. The Segment will also receive a one position movement top to the front. The K. L. L. will be restored at the end of the operation. Therefore, the machine will operate only one time.

Also, when the U. L. L. is out of Register position, the cutout will not be in position to receive the stud in the Rudder Lever. Therefore, the Rudder Lever cannot move to the front and set up conditions for more than one operation.

ADJUSTMENT

The Roll on the Stud in the multi-Selector Segment is removable for adjusting purposes.

This roll must be large enough so that as the Segment is moved from 1 position to home position, the Rudder Lever will be moved top to the back far enough to remove the Stud out of the slot in the Unit Lock Lever.

It must also be large enough so that as the Segment moves up, the Rudder Lever will be positioned so the step is against the Stud in the Transport Segment Latch. This will place the back extension of the Rudder Lever above center of the Bail Shaft. This will prevent the Bail Shaft from moving against the point of the rear extension of the Rudder Lever.

If the Roll is too large and the Segment is moved from the 2 to 1 position, the Rudder Lever will receive movement too soon and the Transport Latch will be cammed up, freeing the Segment, allowing it to move up to the 11 position. The Transport Latch must have a half of a tooth hold when the Segment is moved from the 2 to the 1 position.

A check to determine if the Roll is too small is with the machine in the home position, hold the Rudder Lever top to the front and move the Unit Lock Lever. You should be able to move the U. L. L. with no more than a slight camming of the Rudder Lever.

Listed below are the Rolls for adjusting the Rudder Lever.

Part No.	Part Name	Size
51X52747	Rudder Drive Roll	.240
51X52748	Rudder Drive Roll	.250
51X52749	Rudder Drive Roll	.260
51X52750	Rudder Drive Roll	.270

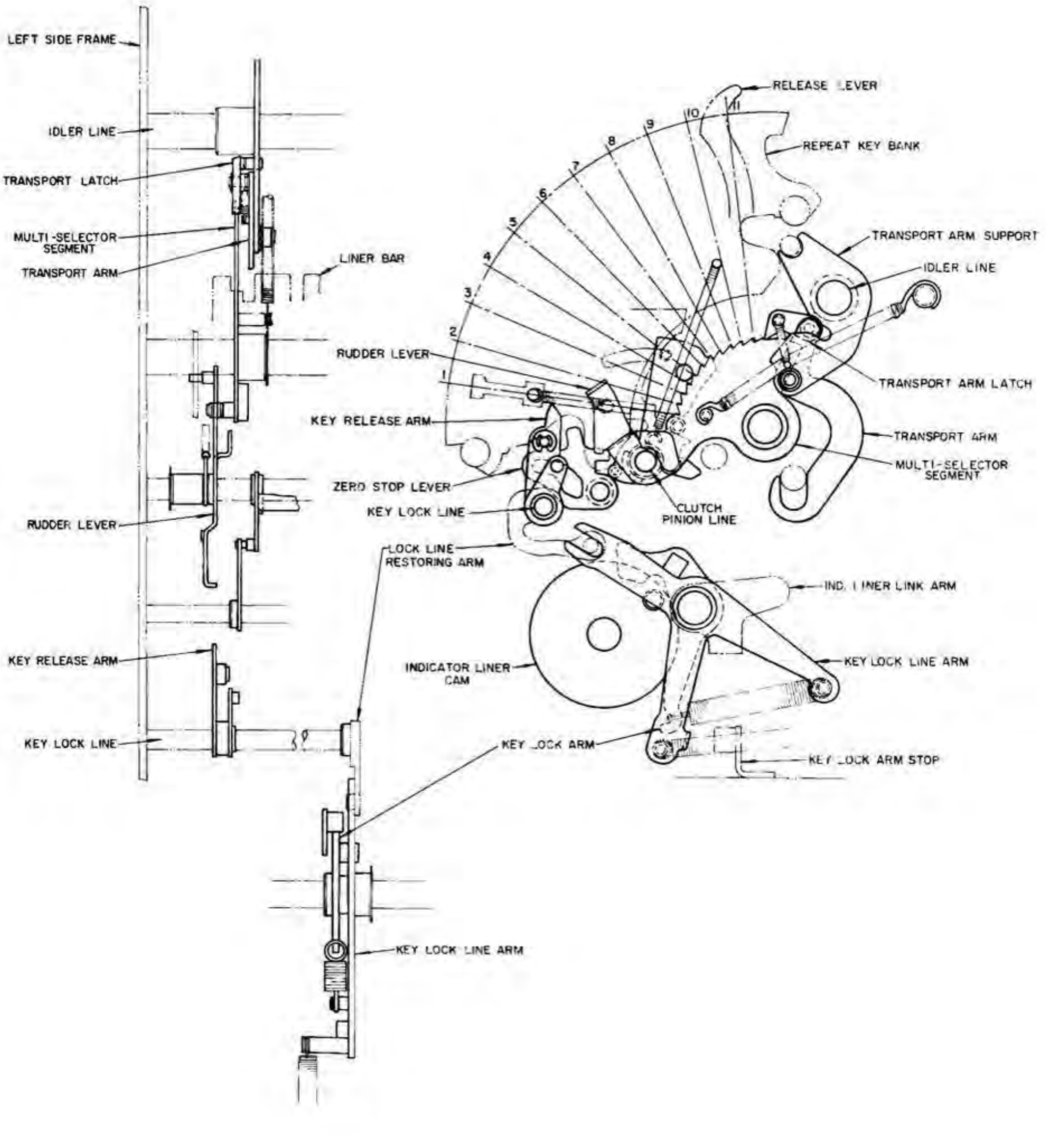
The multi-Selector Stop Arm is to prevent the Segment from moving up so fast that it would rebound or break the Latch off the Segment.

As the Segment moves up to the Key pressed, the Multi-Selector Stop Arm rides on the Roll Stud, in the Segment, to slow the movement of the Segment.

CAUTION

Anytime the Repeat Bank is removed and the machine is operated, be extremely careful to prevent the Bail Shaft from moving against the point of the rear extension of the Rudder Lever.

PRE-DETERMINED REPEAT
5108560



SECTION "X"

PRESET AMOUNT

This feature makes it possible to "Preset" an amount that will record and add each time a Row 2 "Preset" Key is pressed.

"Preset" Keys may be either plus or minus itemizing print keys.

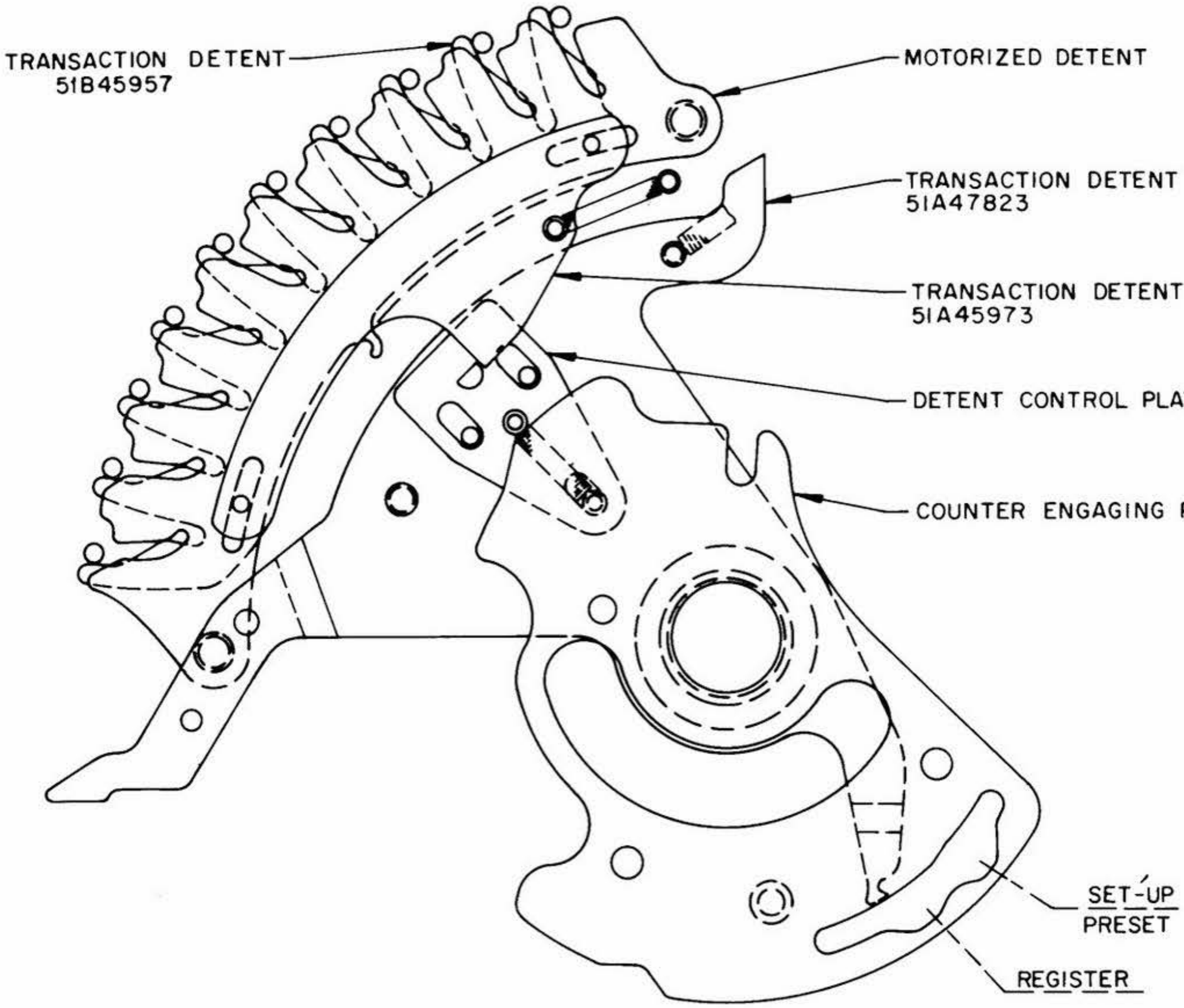
"Preset" Keys cannot have their own total. They cannot be located in Row 1.

The "Preset Amount" feature is identified by the letters "PA" following the printer designation.

This write up pertains to the following machines only:

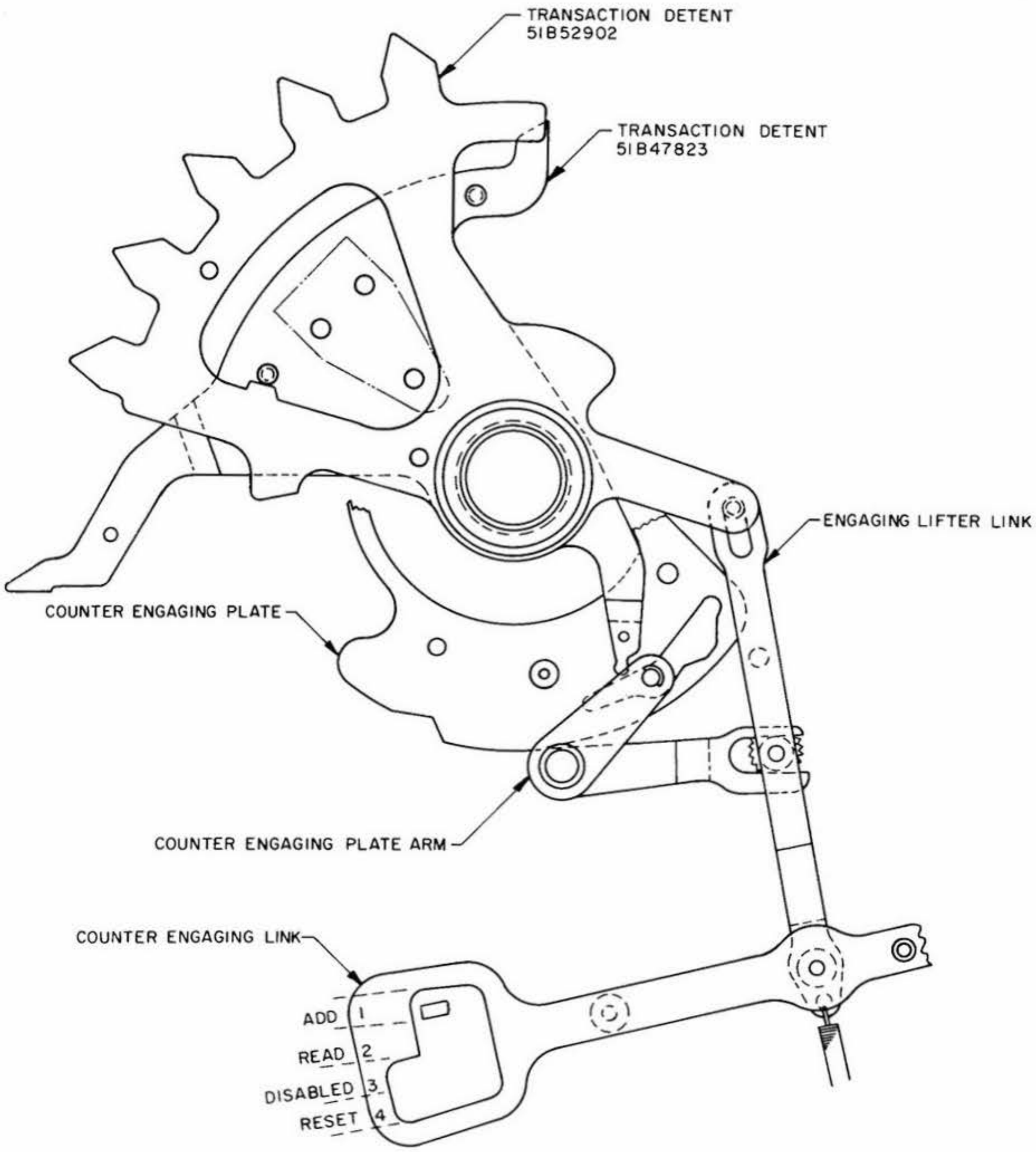
52-37-10-4-1L(CCF)PA-TC-1

52-38-10-4-1L(CCF)PA-TC-1



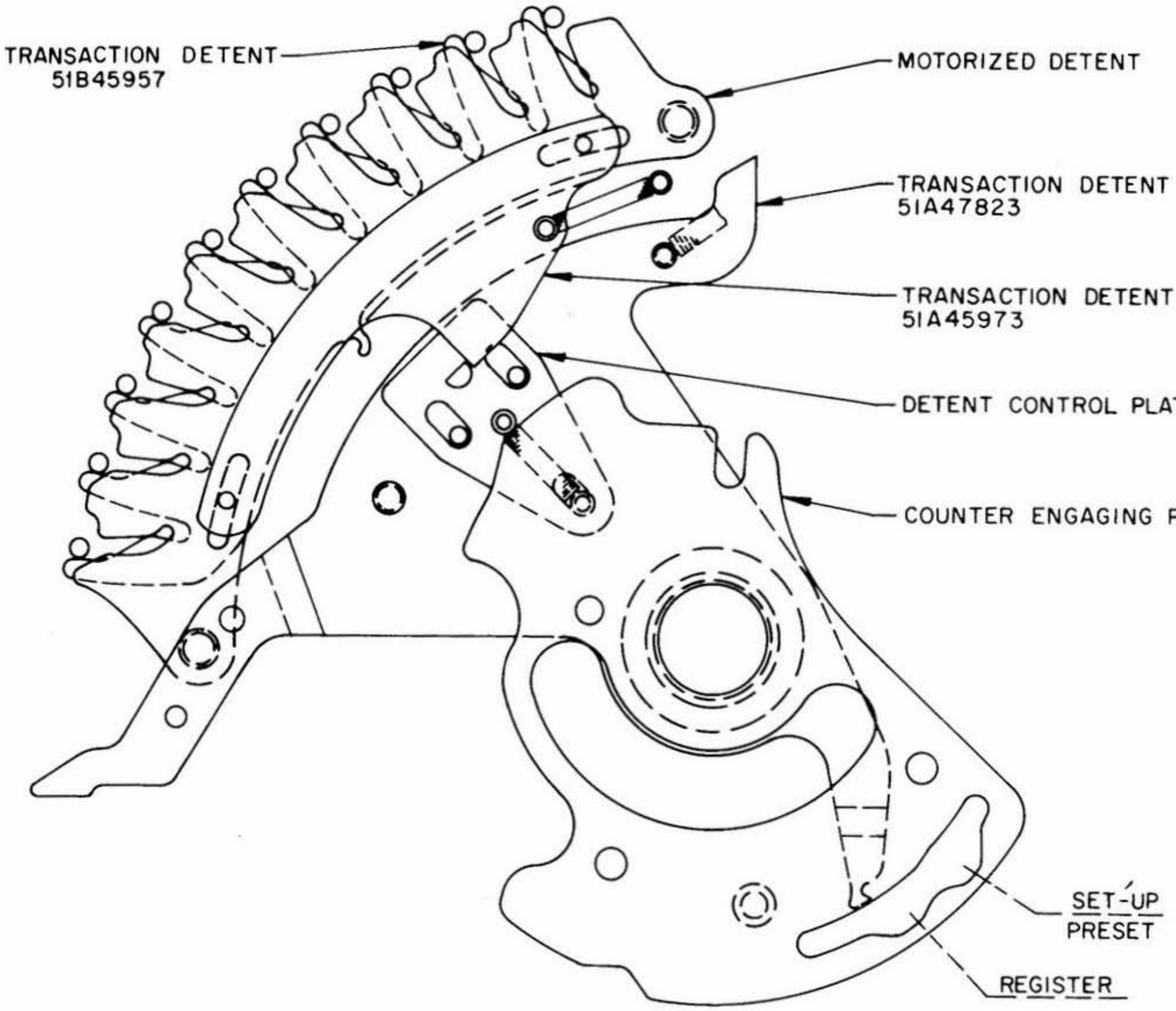
Preset Operation (U. L. L. in Register Position)

As the "Preset" Key is pressed, Transaction Detents 51B45957 and 51A45973 will be moved down. The lower extension of Transaction Detent 51A45973 will contact the half-round stud on the Detent Control Plate moving it and the Transaction Detent 51A47823 down in front. The front extension of the Transaction Detent 51A47823 gives the necessary movement to the Keyboard Yoke to lock out the amount keys. The back extension of this detent will be positioned above the milled stud in the Counter Engaging Plate Arm. This prevents an overthrow of the Counter Engaging Links.



Also, as the Transaction Detent 51B47823 moves down in the front, a stud in it will contact the Transaction Detent 51B52902, moving it down in the front. Assembled to the back of the Transaction Detent 51B52902 is the Engaging Lifter Link, which will be raised. This will raise the Counter Engaging Links to the "Read" position.

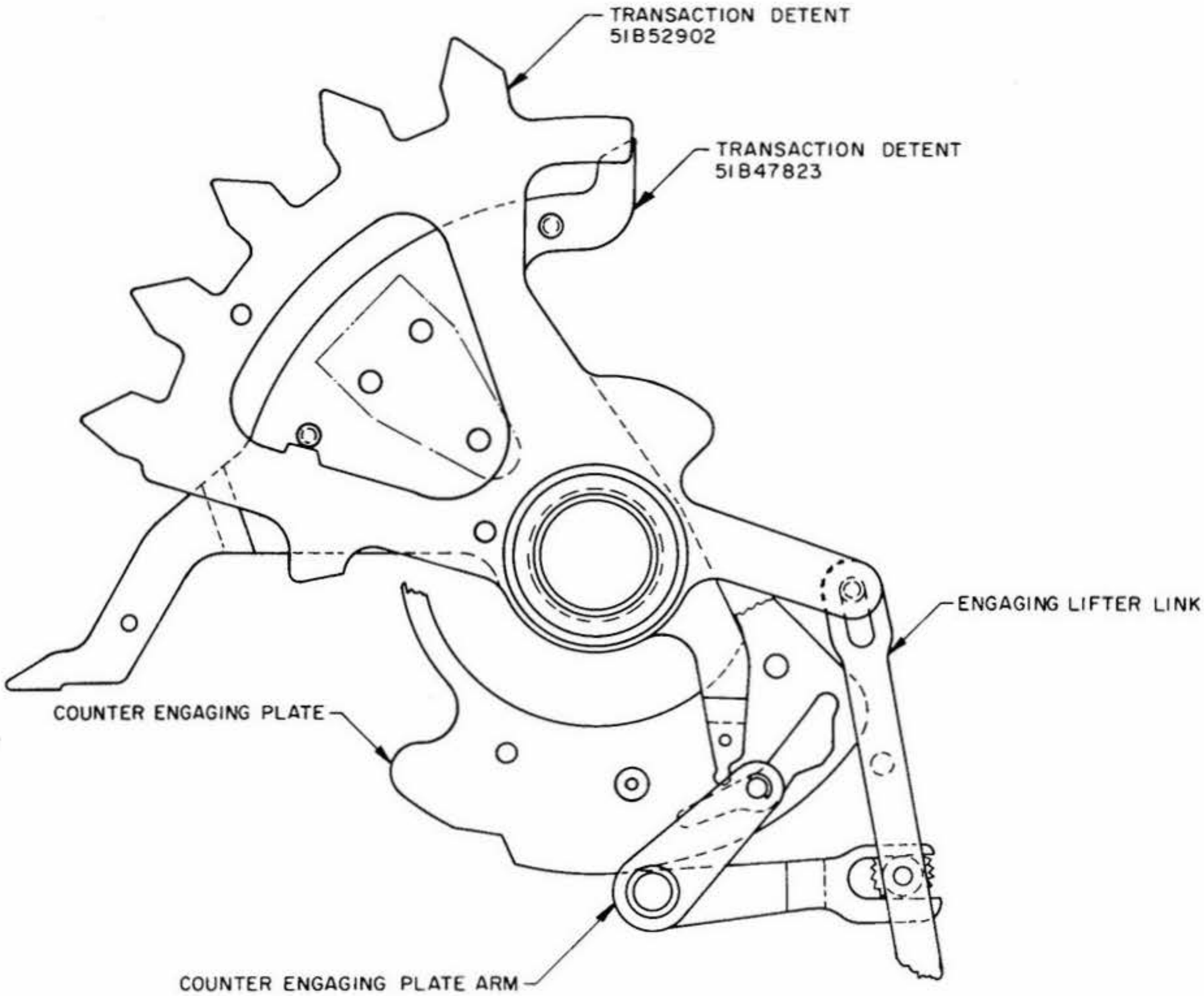
The Upper Counter will be engaged on "Read' timing and the Lower Counter on "Add" timing. The "Preset" amount that is set up on the Upper Counter Department Pinions will be read and added onto the Itemizer Pinions in the Lower Counter.



"Set Up Preset" Operation

To set up the preset amount in the machine, the U. L. L. is moved to the "Set Up-Preset" position. Through the movement given the Control Line, the Counter Engaging Plate is moved top to the back. The high surface on the upper part of the Counter Engaging Plate moves away from the roll and stud on the Dentent Control Plate allowing spring tension to pull it down. The half-round stud in the Detent Control Plate moves below the lower extension of the Transaction Detent 51B45973.

The raceway in the lower part of the Counter Engaging Plate is cut so that the Counter Engaging Plate Arm will hold the Counter Engaging Links in the same position with the U. L. L. in the "Set Up Preset" position as it does in the "Register" position.



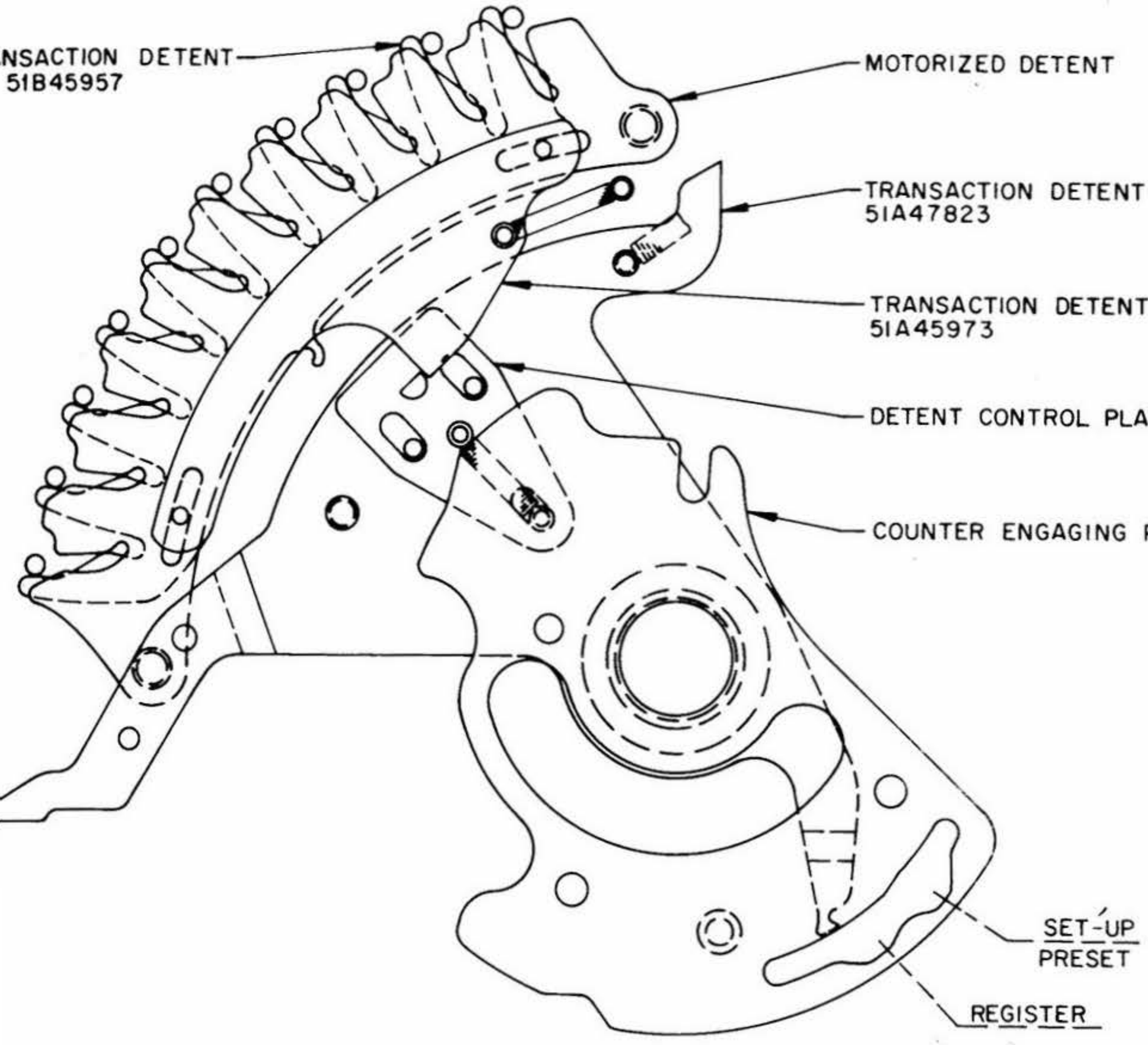
By lowering the Detent Control Plate, the Transaction Detent 51A47823 will not be moved when a Row 2 Key is depressed. This allows the amount that is indexed on the amount keysto be added to the Row 2 Transaction Total in the Upper Counter. This is possible because the Transaction Detent 51B47823 is not moved down the bank as it is duri ng a "Preset Amount" operation with the U. L. L. in the "Register" position.

The functions of locking out the amount keys and of raising the Counter Engaging Links to the "Read" position do not occur because of the disabling of the Transaction Detent 51B47823. This allows the amounts to be added to the Row 2 key totals wıth the U. L. L. in the "Set Up-Preset" position. Each of these totals will represent the "Preset" amount that will be accumulated in the itemizer pinions when the "Preset" keys in Row 2 are used with the U. L. L. in the "Register" position.

If one or more keys in Row 2 are "Free" Keys, the corresponding projections on the Transaction Detent 51B45957 will be removed. Also the Lockout Plate would be cut so that these Keys could be pressed with the U. L. L. ın the "Read Row 2" position and could not be pressed with the U. L. L. ın the 'Set Up-Preset" position. The Lockout Plate prevent s "Preset" keys from being pressed with the U. L. L. in the "Read Row 2" position.

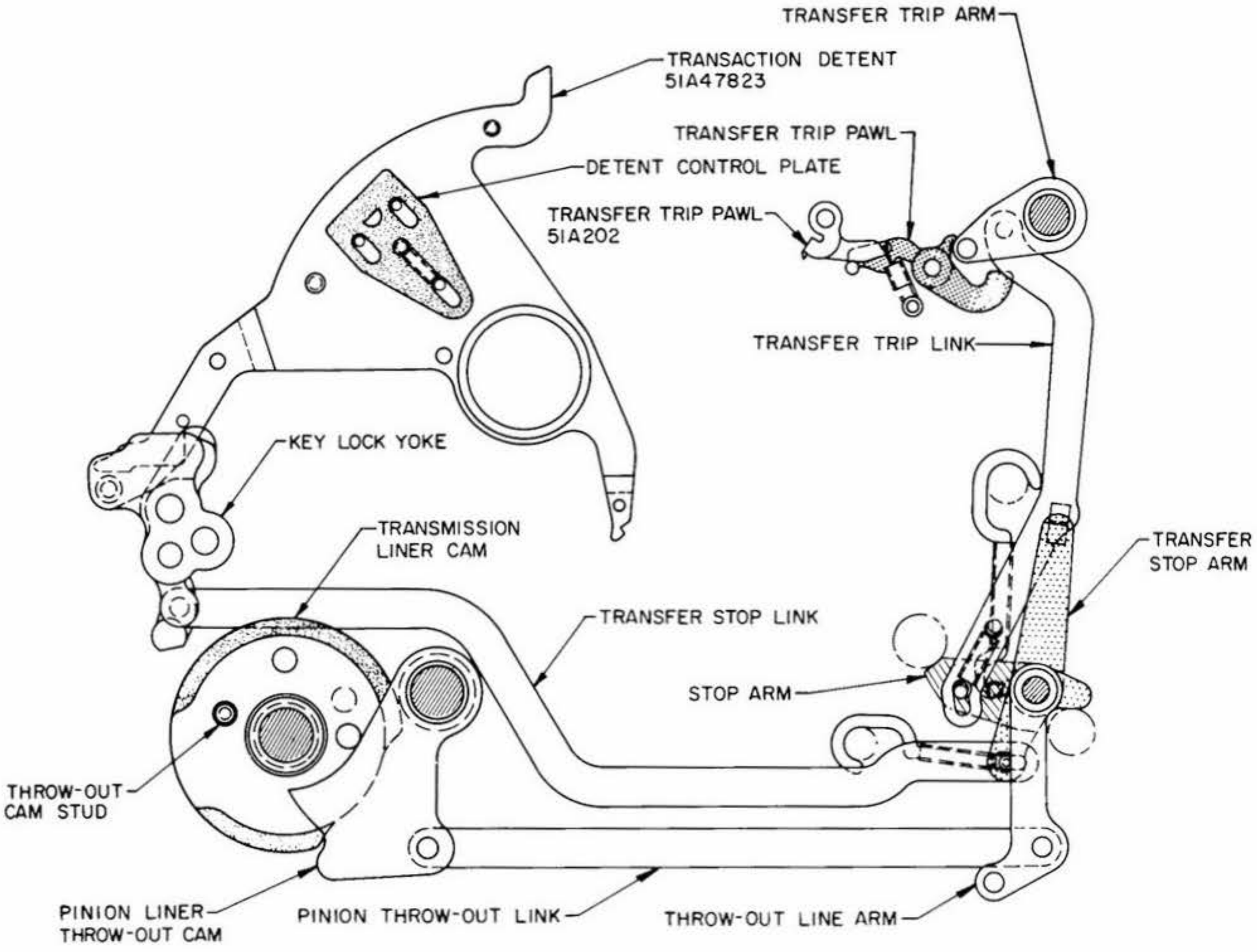
SECTION "Y"

PRINTED TRANSACTION COUNT



Selection & Addition

When the U. L. L. is in "Register" position, the Counter Engaging Plate will have a high portion under the Spring Stud in the Detent Control Plate. This will hold the plate up and place the Half-Round Stud in the Detent Control Plate, in the path of the Transaction Detent 51A45973.



Selection & Addition Cont'd.

As the "Preset" Key in Row 2 is pressed, the Motorized Detent will move the Transaction Detent 51A45973 down. The lower extension of the Detent 51A45973 will contact the Half-Round Stud in the Detent Control Plate and will move Detent Control Plate and the Transaction Detent 51A47823 down The Transaction Detent 51A47823 will move the Key Lock Yoke top to the front, locking out the Amount Keys.

Assembled to the Key Lock Yoke is the Transfer Stop Link, which will be moved to the back and will move the Transfer Stop Arm top to the front. This will move the upper extension of the Transfer Stop Arm, out from under the Transfer Trip Link.

Selection & Addition Cont'd.

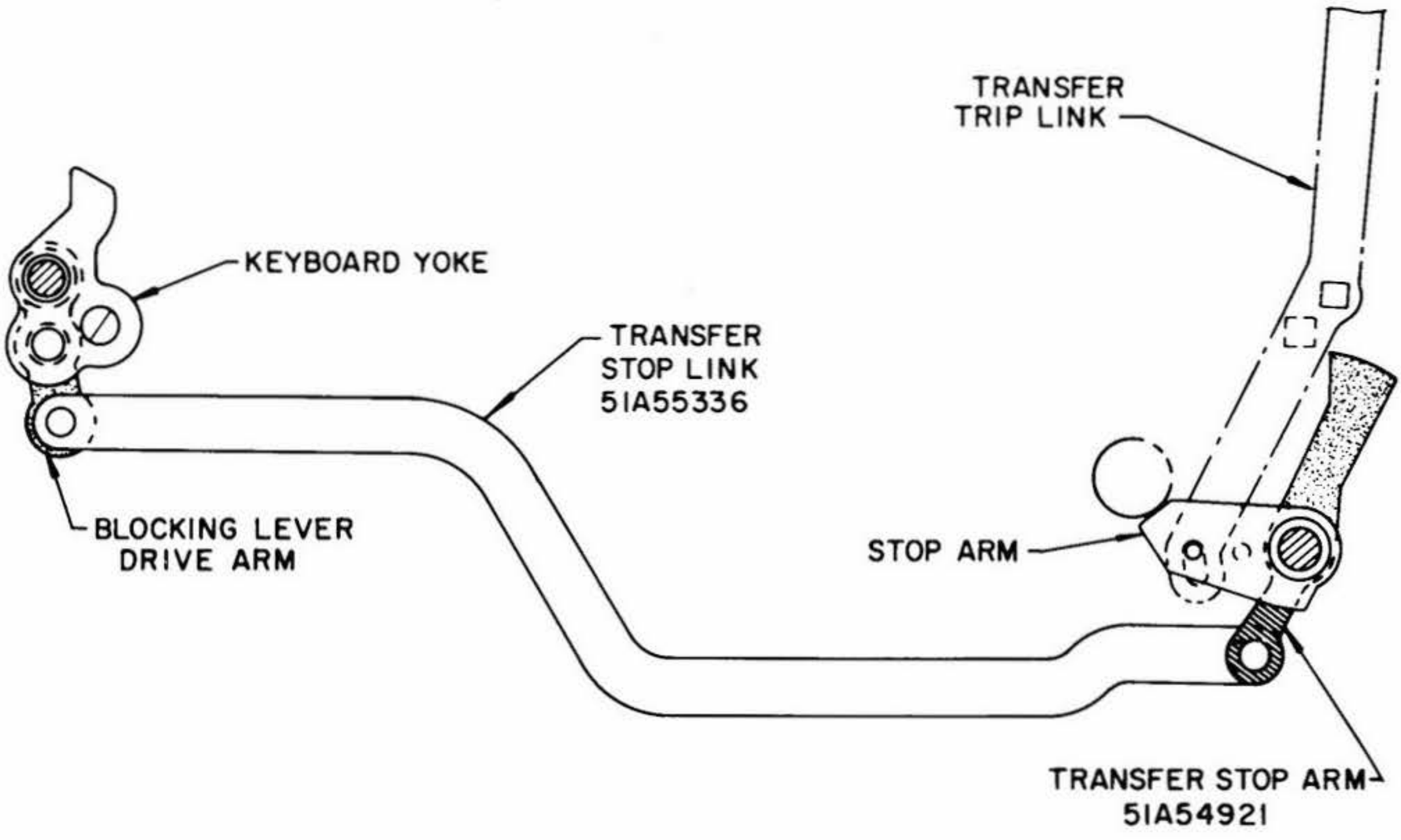
At 7/8 to 1-1/8 T. O. H. a stud in the Transmission Liner Cam will move the Pinion Liner Throw-Out Cam bottom to the back. This movement will move the Liner Throw-Out link to the back. The Throw-Out Line Arm will be moved bottom to the back, turning the Transfer Stop Arm Line bottom to the back. Pinned to the Transfer Stop Arm Line is the Stop Arm, which will be moved down in the front. The Stop Arm will move the Transfer Trip Link down and will move the Transfer Trip Link down and will move the Transfer Trip Arm down in the front. A stud in the Transfer Trip Arm will contact the back extension of the Transfer Trip Pawl, moving it down in the back. The front extension of the Transfer Trip Pawl will be moved up, freeing the Transfer Pitman to be carried to the front. The Transfer Pawl w.ll contact the Counter Pinion, turning it one position.

Just before 1-1/4 T. O. H., the Throw-Out Cam Stud will move away from the Throw-Out Cam and spring tension will restore the Stop Arm up in the front. The Transfer Stop Arm Line will be turned up in the fr nt The Throw-Out Line Arm will be carried bottom to the front, moving the Pinion Throw-Out Link and Throw-Out Cam to the front.

At 1-3/4 T. O. H., the K. L. L. will restore. This will also restore the Transfer Stop Link and the Transfer Stop Arm, placing the upper extension of the Transfer Stop Arm under the Transfer Stop Link. Also the Key will restore and spring tension will restore the Detents.

All Keys in Row 2 may not be "Preset" Keys. Therefore, the Transaction Detent 51B45957 will have the extensions removed in the pos tions where the "Free" or "Open" Keys are located. When the "Free" Keys are used, the operation will be the same as an Item Operation on a standard C-51.

READ MECHANISM

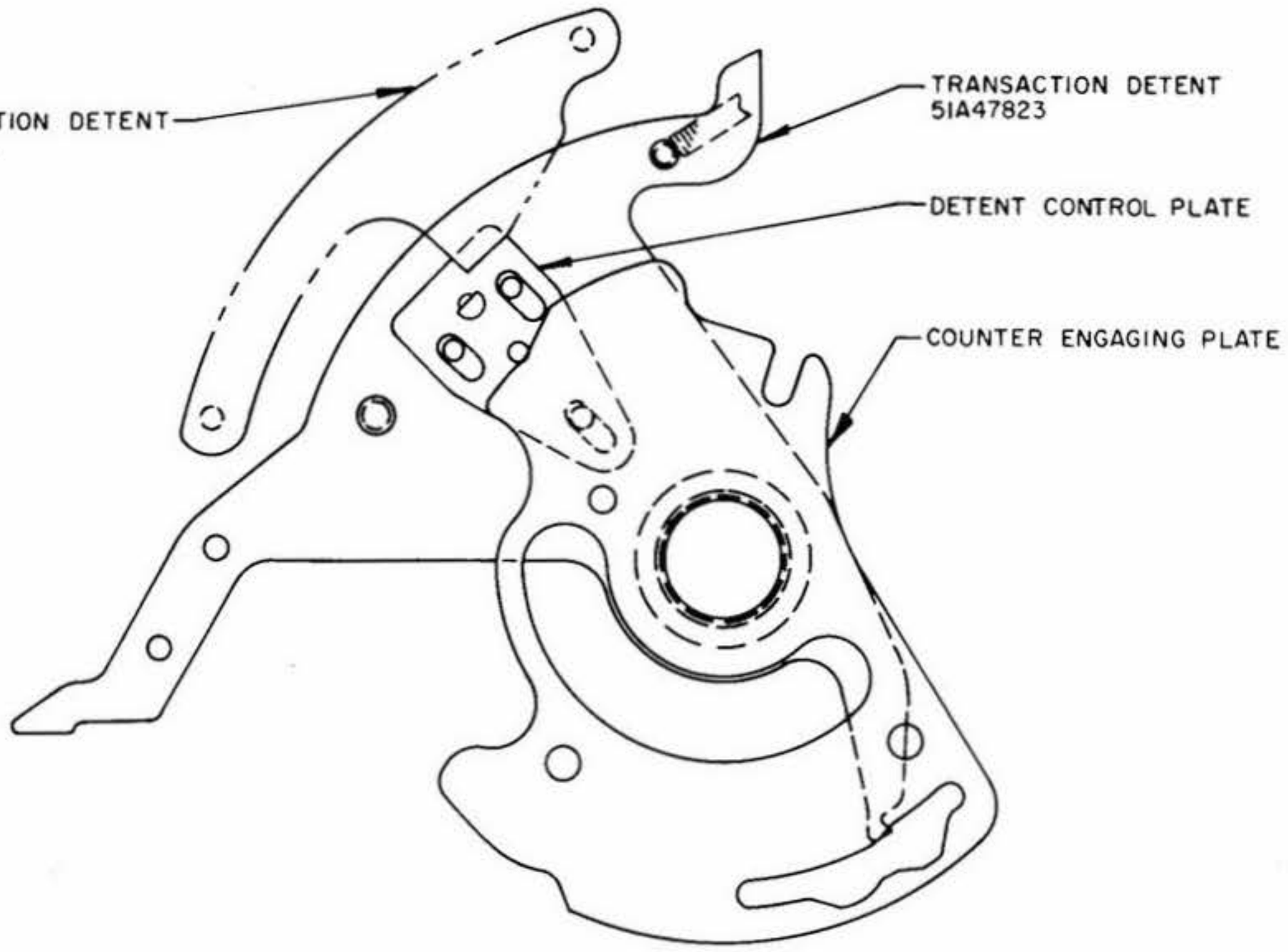


Read Mechanism

In order to read the Transaction Count, additional parts must be installed to prevent adding to the count when it is read.

When the U. L. L. is moved to "Read Row 2" position the Keyboard Yoke will be moved top to the front. Assemblied on the Keyboard Yoke is the Blocking Lever Drive Arm which will be moved bottom to the back. The Transfer Stop Link 51A55336 will be moved to the back, turning the Transfer Stop Arm 51A54921 top to the front. This places the upper extention of the Transfer Stop Arm 51A54921 under a stud in the Transfer Stop Link. This will prevent the Transfer Stop Link from receiving enough movement to trip a transfer.

U.L.L. IN RESET ROW 2 POSITION



U. L. L. Out of Register

When the U. L. L. is moved to "Reset Row 2" position, the Counter Engaging Plate will be moved top to the back. This will place a low portion under the Spring Stud in the Detent Control Plate. Spring Tension will move the Detent Control Plate down and the Half-Round Stud in the Detent Control Plate will be out of the path of the Transaction Detent 51A45973. Therefore, when the Row 2 Key is pressed, no movement will be given to the Transaction Detent 51A47823 and the machine will operate the same as on a standard C-51 machine.